CHEMICAL INDUSTRIES

VOLUME XXXVI NUMBER 1

Prejudiced Opinions

"BUSINESS WEEK" has recently published the results of a questionnaire purporting to reveal what American business thinks of N. R. A. At least it is fair to assume that this was the object, for, although the original questionnaire was entitled "Survey of Trade Association Activities," the results were broadcast under the heading "Business Speaks for Itself." Let us excuse this trifling inconsistency as journalistic enthusiasm and inquire a little more deeply into how this plebiscite was taken and the conclusions drawn from it.

The questionnaire, which was quite elaborate, contained a variety of questions about budgets, co-operative advertising, etc., so that any trade association official—and it is significant that the questionnaire was addressed to trade association secretaries—would take upon himself to answer it without referring it to his directors. Among the questions asked were several leading ones emphasizing the bigger budgets and greater importance of the trade associations since they have so generally assumed code administration work, along with others querying the value of N. R. A. and its popularity among the members.

At one of the Naval Conferences, Will Rogers offered to bet a distinguished Admiral that he was not there to vote the battleships out from under his feet; and we have too much respect for the intelligence of "Business Week" to suspect that its editors dreamed that a majority of trade association secretaries would vote against N. R. A. Code work has raised their salaries and bestowed upon them new influence, which in many cases amounts to a valuable combination of police powers and judicial authority. As soon expect cotton farmers to vote against crop restriction, the Legion against the bonus, or hog raisers to save the little pigs, as to expect trade association officials to turn back to the Federal Trade Commission the custody of trade practices and price maintenance.

This is a matter of broad concern. This questionnaire has been widely quoted. It will doubtless be brought forward as an argument for the continuation of N. R. A. Much more important is the growing habit in Government circles to collect such prejudiced opinions and to herald them as democratic self-government. The farcical vote supporting the Bankhead Cotton Law is thus hailed as a mandate to regiment all American agriculture. Indeed, a most serious objection to the N. R. A. itself is that it permits groups of interested insiders to write codes which have the force of laws.

The Profits From War

Secretary Dern and the General Staff of the Army view war supplies realistically, and the statements of the War Department before the Nye Committee were a breath of clean, cold air blowing through the murky atmosphere of this bemuddled Senate investigation. We can be grateful indeed that the Army realizes thoroughly that modern war is a matter of much more than men and munitions, and that they have given careful consideration to thoroughgoing plans for a complete mobilization of the entire nation.

It follows naturally—and the experience of the World War proved it—that the great opportunities which have always existed for war profiteering are enormously enhanced. If the profit is to be taken out of war, we cannot stop with the makers of explosives and the gun manufacturers. All industries, and the farmers too, are stimulated by the abnormal demands, not for consumption, but for destruction. The solution is quite easy and it was applied during the past war. The excess profits tax is quite the simplest, the surest, and the most direct means of transferring war profits to the nation's credit for the common cause.

Bergius on Development Work

"The Confessions of a Research Chemist" would serve as an apt subtitle for the address Dr. Bergius made when, in England recently, he was awarded the Melchett Medal. Certainly very few living men are able from a wider experience to recount in detail the story of the development of a new chemical process from test-tube to world-wide industry, and very few research workers indeed have so revealingly told of their own fears and faiths.

From his personal experiences Dr. Bergius draws some general conclusions that are of interest. He emphasizes—and few will question the importance or significance of this point—that the dangerous age of a new chemical development is after it has come from the inventor's laboratory and is put to work in semi-scale plant. But most of us in America would be inclined to feel that he has been somewhat over-cautious in declaring that it takes twenty years to bring a new chemical idea to practical, commercial success. However, upon the basis of this two decades of experimental work, he points out a fact we often overlook: namely, that in these times economic conditions often change markedly during the development period.

"'Tis true, 'tis pity And pity 'tis, 'tis true"

Warm hopes that the President, convinced that his first duty to the nation is to speed our halting recovery, intends sincerely to cooperate with our industries to that end, were frozen stiff by the reception accorded in Washington the Recovery Program drawn up by the joint meeting of the Manufacturers' Association and the Chamber of Commerce of the United States. Mr. Roosevelt did not even think it worth while to receive the spokesman who brought this plan in person to the White House. From a score of his officials and advisers rose mingled roars of protest and yowls of denunciation.

Whatever anyone may think of this program; whether you regard it as badly reactionary or boldly constructive; it is plainly a sincere effort on the part of the leaders representing American industries to put their views before the President and give him the benefit of their collective experience, which is very great, on how best to restore business activity. Mr. Roosevelt has never been so frank and clear in discussing the ways and means to recovery; and if the program points out some selfish interests of Industry, beside similar plans recently announced with great flourishes by Labor and Agriculture and the Veterans, it is a veritable model of generous and patriotic altruism.

It is a pity that these suggestions of Industry were not received in a more cooperative spirit. But if the President's own recovery program is to go forward along many lines that industrialists mistrust; if the dollar is to remain unstable, if N.R.A. is to be made permanent, if the budget will not be balanced—and these are the only inferences to be drawn—is it not well to know now with what we must reckon? If Labor is to be coddled and Agriculture subsidized, while Industry is ignored, is it not high time for our lack of confidence to give way to fighting courage? Industry produces sixty per cent. of our national wealth and pays indirectly eighty per cent. of our federal taxes. Industry has given us the highest standards of living the world has ever known. Industry's ten million stockholders are the sound, thrifty group which are our most valuable citizens. Industry is no more responsible than Agriculture or Labor for the international mistakes of the politicians, the juggling of financiers, the speculative orgy of the people which combined to precipitate this depression. Industry is the only element in the nation with the resources and the experience necessary to move us all out of the slough of bankruptcy and unemployment. These facts are apparently not to be reckoned with by the Administration: this should be made plain to the country.

A Chemical Tourist Visits Michigan's Northern Peninsula

Iron Ore and Hardwood Logs

The Rebirth of Wood Distillation Technic

By Williams Haynes

BATTERED by competition from new processes and products, its best markets cut away, pilloried for its antiquated methods and neglect of research, the wood chemical industry has been for the past ten years our chemical stepchild. Its rather messy, small scale plants tucked away in drab little lumber towns have been held up in scornful comparison with the great copper and concrete models of modern chemical engineering skill, from which synthetic methanol of perfect purity pours in an ever-growing stream. Its clumsy treatment of limestone with crude liquor to make acetate for the production, by other manufacturers, of acetic acid; the charcoal it produces willy-nilly; its lack of control over the sales; all these have been branded as quite passe. Yet somehow or other, this derelict industry is still afloat.

Wood chemical business is still being done at the same old stand. "The King is dead. Long live the King!"

Why and how has this chemical miracle come to pass?

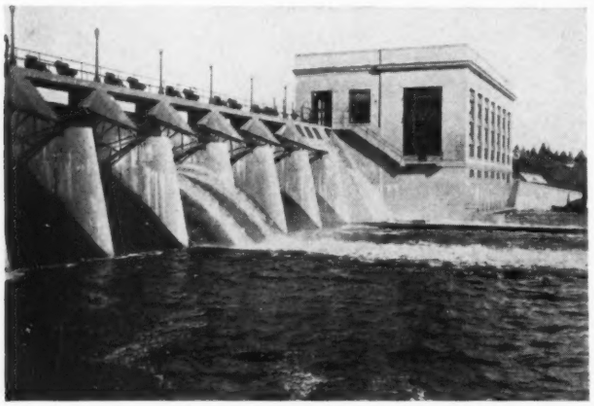
One theory is that the poor wood distillers have not sense enough to know when they are wiped off the chemical map. I do not agree with this obnoxious chemical snobbery. A great many wood chemical men have told me very plainly about their troubles, and from company presidents in plain little offices to bemittened wood bosses stacking cords out in the timberlands, they see their problems clearly. They by no means agree on the solution; but they certainly do not underestimate their multitudinous difficulties.

They refuse, however, to be scared to death. This, I suspect, is because they are well toughened by adversity. They have had their rich slices of prosperity; but more than once they have faced what seemed to be extinction. Having lived through several crises of legislation and switched markets, of failing raw materials and new competition before, they are not easily panic-stricken.

Stories have lately come out of the Upper Peninsula of Michigan hinting broadly at a wood distillation renaissance. That rugged jut of land, thrust like a protecting arm over Lakes Michigan and Huron, seems a likely birth-place for a wood chemical revolution. An exiled chemical engineer from the Bronx described the country as "the Siberia of America." It has indeed its desolate aspects, a rough country, stripped of timber, all gashed with great open-pit iron workings, and piled high with mine dumps. Yet something of the iron of that ore-ribbed land must get into the blood, for only a few moments later he boasted, "We have only two seasons up here—July and Winter." I believe him. By the calendar it should have been a lovely Indian summer day in early October; but a sixty-mile gale, straight from the North Pole, was hurling icy snowflakes in our faces as we crossed from the retorts of the stillhouse. Up in that he-land are a combination of men and resources, new plants and new research.

Above, row of deserted beehive wood kilns at Carp River, near Marquette, Mich., where the Chippewa Chief, Marji Gesick, discovered iron ore. Below, loading modern horizontal retorts with buggies, each holding two and a half cords of hardwood.

Wood chemical industries hark back to a very ancient handicraft, charcoal-burning. Even the recovery of the by-products is not a recent discovery, since the Egyptians used both woodtar and the crude pyroligneous liquors in their embalming. The association of charcoal-burning with metallurgy, which has always been so prominent in Michigan, goes back before history.

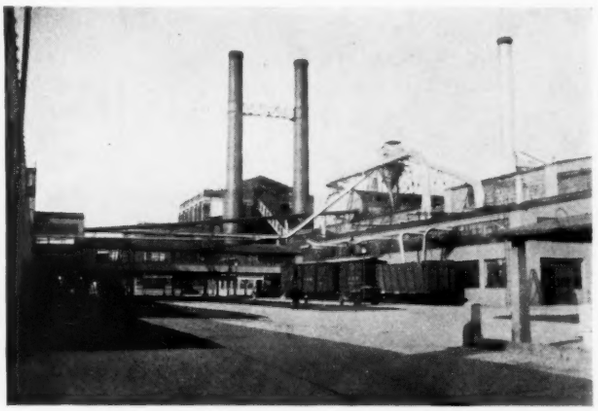


Hydroelectric station of the Ford wood chemical plant on the Menominee River, near Iron Mountain, Mich., with a capacity of 80,000 k.w.h. per day.

In the United States the carbonization of hardwood to make charcoal, like its sister operation to produce pot-ashes, began in colonial days, when charcoal was a prime ingredient of gunpowder. About 1812 the basis of the hardwood distillation process, as we still know it, was laid down. The products now became charcoal, crude pyroligneous liquor from which acetate of lime was made, and methanol, with flue gases used for preheating of the wood or heating the retorts, and tar which, as often as not, has been burned in the plant furnaces.

The old beehive oven was replaced by similar ovens from which the volatiles were collected in pipes. Columnar stills made pure methanol possible. The beehive ovens were replaced by long horizontal retorts, into which the wood is charged in great iron baskets on wheels called "buggies," holding two and one-half cords each. Both these last were distinctly American innovations. More recently the direct production of acetic acid and various processes for the carbonization of sawdust and fine wood scrap have been the most important innovations.

The commercial story of the wood chemical industry is a chronicle of changing uses and violent price fluctuations. In 1859, the discovery of a red-violet dye, made by dissolving fuchsine in methanol and oxidizing the solution, created a new, large demand which, after running the price up, died out quickly when the dye so made was replaced by rosaniline. Six years later the discovery of methyl-green and methyl-violet began a use of methanol in dye-making which continues today. Then followed a long, prosperous period, when methanol as a substitute solvent for ethyl alcohol enjoyed a generous, if quite unconscious, subsidy in the high excise taxes upon its beverage competitor. At the very satisfactory quotation of "$1 per gal." a large market was built up in the days before broughams and phaetons, finished with many painstaking coats of varnish, had been replaced by lacquer-sprayed roadsters and coupes. In 1906, the denaturing law removed this subsidy by permitting the sale, tax free, of denatured ethyl alcohol, and the ruin of the wood chemical industry was confidently predicted. The ten per cent. of methanol used for denaturing its competitor helped some. Acetate of lime prices rose because of increased use of acetic acid in making photographic films, and a new market opened up in formaldehyde made from methanol. With the war came an unbelievable demand for acetone from the munition makers and also for acetates for airplane "dope." After the war the sensational expansion of Bakelite, requiring more and ever more formaldehyde, and the development of a half score of acetic derivatives used in the then-new cellulose lacquers promised booming sales of wood chemicals.



View of the Ford wood chemical plant at Iron Mountain; power house with twin stacks in center, and stillhouse and charcoal plant to the left.

But, suddenly, in the Spring of 1925, synthetic methanol appeared from Germany at 45c, which was just 32c below domestic quotations for the pure grade. President Coolidge, on recommendation of the Tariff Commission, based upon the classic report of Carl de Long, invoked the flexible tariff. But this relief only postponed the evil day. Within two years synthetic methanol was made in America, behind the tariff wall.

Methanol is not, however, the only wood distillation product that today meets vicious, new competition. Acetone is now produced as a joint-product in butanol fermentation. Acetic acid is made synthetically from acetylene from coke and lime. To cap the climax (and this is a serious consideration in Michigan) charcoal iron no longer commands its old premium position. Up in Michigan are a series of wood distillation operations, displaying a variety of techniques and all sorts of economic foundations, which are all facing this grave situation.

At 5.30 the Pullman porter hustled me out of the sleeper at Iron Mountain. It was dark and drizzly and cold. I began to wish the wood chemical industry had been exterminated about seven years before I

was born. But a Michigan breakfast of baked apple and oatmeal, ham-and-eggs, wheatcakes, two cups of coffee, and buttered toast helped a great deal; and by eight o'clock, when I was driven out to the Ford plant, the sun was shining brightly.

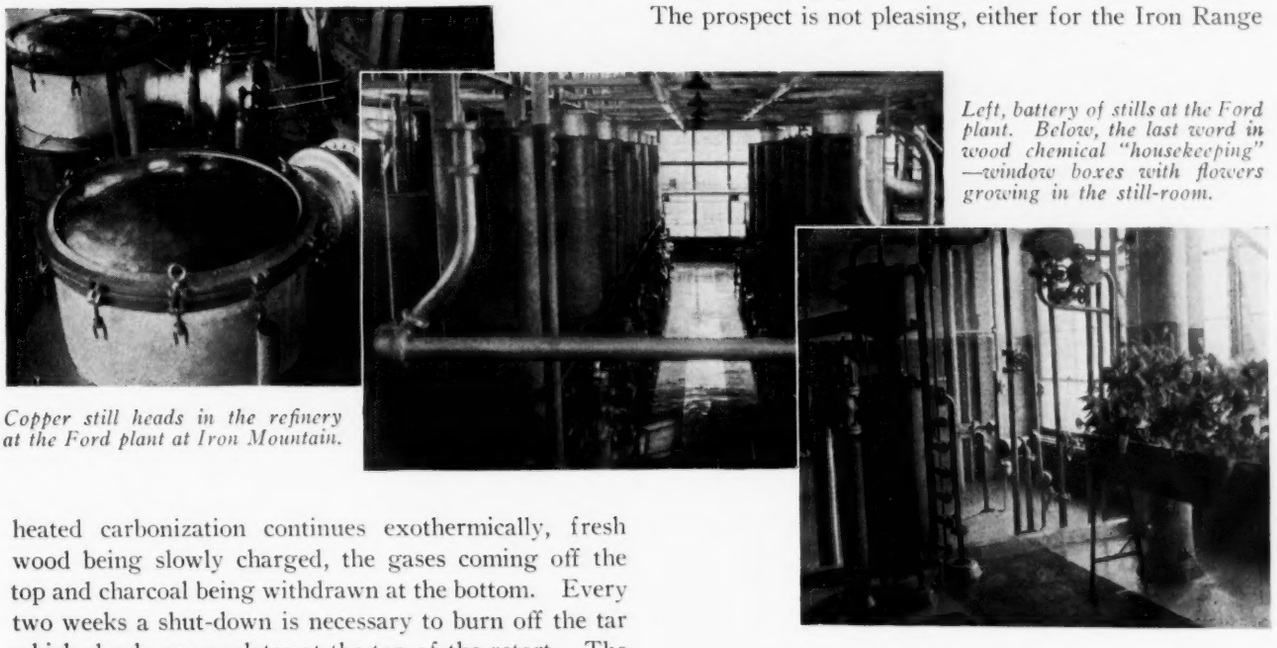
This famous plant makes a capital introduction—because it is so different—to Michigan's wood chemical enterprises. In the first place, it is a Ford plant! Its "housekeeping" is, accordingly, scrupulous. Its painted floors and polished bolt heads give the feeling one gets in the dairy barn of a Long Island estate. Yet, as step by step you go through the operation, you learn with astonishment that despite its dandified airs here is a chemical plant where not an ounce of steam, not a single B. T. U., not even a vagrant flake of sawdust goes to waste.

The Ford operation differs technically and economically from its neighbors. The chemical plant, built ten years ago, and two years after the wood-working department, uses not only the scrap from this department, but the waste also from the company's own lumbering operations. It was in order that not even the tiniest scrap should be wasted that the Stafford process was adopted. Three vertical retorts, lined with firebrick and heated to about 900° F., are charged from the top with mixed wood scrap, euphoniously and descriptively known as "hog-feed". The wood is pre-dried by the waste flue-gases from the power plant to less than half a per cent. of moisture. After the dry chips are once thoroughly heated carbonization continues exothermically, fresh wood being slowly charged, the gases coming off the top and charcoal being withdrawn at the bottom. Every two weeks a shut-down is necessary to burn off the tar which slowly accumulates at the top of the retort. The retorts are alternated so that two are continuously on the line while the third is available for cleaning or repairs. The whole process has been frequently described (see particularly Ind. & Eng. Chem., Ap. 1930).

No two wood chemical men ever agree upon the comparative efficiency of any two wood chemical processes. There's a reason: any wood distillation and subsequent refining operations or chemical manipulations, depend chiefly upon the economic set-up of the whole enterprise. Certainly, with a surplus of small wood scrap and the economical means of complete pre-drying, the Stafford process has a logical place at the Ford Body Plant. Its advantages are clear enough. It is more nearly a continuous operation than the buggy-charged retorts. Its crude distillation products are, thanks to complete pre-drying, more concentrated. Very complete recovery is claimed. As operated at Iron Mountain, it is said to be most economical.

This Ford plant has a capacity of 350 tons bone dry wood a day, and it is producing a remarkably complete line of wood distillates: C. P. methanol (which is all sold); acetic acid, which at present is all converted to ethyl acetate, most of which is used for lacquers; methyl diacetone, allyl alcohol, hardwood pitch, creosote oils, and charcoal in briquette and granular form.

Late that afternoon two native sons drove me eighty miles across the rolling "iron ranges" to Marquette. We passed through deserted villages dominated by great sloping waste piles and jagged, crumbling caves that were ore diggings. We drove over long ridges of iron deposits so rich that they killed the car's radio. For in this lavish mineral kingdom are ores running as high as sixty per cent. iron, and it does not pay to work to any considerable depth or when the deposit runs as low as thirty per cent. We passed baby mountains of ore, waiting for the steel industry to come back; and I learned that throughout the Upper Peninsula from forty to seventy per cent. of the families are on relief. The prospect is not pleasing, either for the Iron Range country or for the wood chemical industry, whose operations must dovetail into lumbering and mining with something of the exactitude of a well cut jigsaw puzzle.



Copper still heads in the refinery at the Ford plant at Iron Mountain.

Left, battery of stills at the Ford plant. Below, the last word in wood chemical "housekeeping"—window boxes with flowers growing in the still-room.

Everywhere this story is told with varying emphasis, for at each plant are different combinations and permutations of the factors of ore smelting, wood-working, and chemical production.

From R. W. Scott, who for more than forty years has

To the left, a deserted cave-in iron mine near Iron Mountain. Above, taking in the raw material; logs being hauled through the sluiceway at the Cleveland-Cliffs plant.

been with the Cleveland-Cliffs Iron Company, came this kaleidoscopic background of the industry. We had been through the wood chemical plant from the sluiceway where the logs are hauled in, through the battery of twenty-two retorts, capable of handling 190 cords of wood daily, through the stillhouse, the acetate plant, and the charcoal activating unit, and were back in the office.

"In 1845," began Mr. Scott, tilting back his desk-chair, "a Chippewa chief, Marji Gesick, discovered iron ore in this Lake Superior country and within five years the company was organized which has become the Cleveland-Cliffs Iron Company. Our first charcoal furnace was built in 1858. At that time the lumbermen didn't bother with anything except white pine. When that was all cut out, by the 'nineties, they began taking hemlock, and as a by-product there grew up a tanning extract industry. The hardwoods, which the early sawmills passed by, we used to make into charcoal for our furnaces. In those wasteful, pioneering days, we all made our charcoal in stone beehive ovens. About 1896 the beehive ovens began to be equipped with fans which drew off the smoke and gases through pipes to be condensed in copper piping run through water troughs. Gradually the modern horizontal retorts replaced this crude apparatus.

"Up to 1920, we had a steady profitable market for charcoal pig iron. It was used for railway car wheels and had first call for most light foundry work. Improved coke iron has become as useful as charcoal iron in many foundries, but there are certain grades of charcoal which still have the call. Yet our operation has been built up on the lumbering hardwood, sixty per cent. of which is 'chemical logs,' that is, four inches up in diameter and unfit for lumber or ties; and making charcoal for the blast furnace and wood chemicals."

At the Newberry Lumber and Chemical Company, forty miles away, P. S. Hamilton tells the same tale in a different way: "It is almost essential that all our departments operate at the same time. They are all interdependent. Both saw logs and cordwood are produced on our own land: logs are cut into lumber and the waste goes to the boilers or the cordpile. The cordwood is put through the retorts daily, and the crudes are refined to acetic acid, methanol and tar, while the charcoal is used in our ore furnaces. The saw mill produces fuel for our boilers which in turn operate the steam engines to make electricity, and the exhaust from the steam engines evaporates the liquors in the chemical plant. Electricity in turn runs the saw mill. Excess gas not needed for the hot blast in our furnaces is piped to the power house. Each department depends upon the other."

This Newberry plant shows how this interlocking enterprise has created whole communities. It normally employs 350 men in the plant and 400 in the woods. Of the 2,500 people in Newberry, two-thirds are dependent on this operation, and the Company pays forty per cent. of the village taxes. It owns forty houses and furnishes the whole village with electricity. The Newberry plant capacity is 160 cords a day, which means a monthly output of 2,500 tons of pig iron, 55,000 gallons of methanol, and some 900,000 pounds of acetate of lime to say nothing of the saw mill with 40,000 feet of lumber and 200 ties each day.

Three miles west of Sault Ste. Marie, is the plant of Clyde Saunders' Cadillac-Soo Lumber and Chemical

Company, a saw mill-retort set-up, which has been virtually shut down since fire destroyed the stillhouse three years ago. During that time, nearly three million feet of lumber have been shipped out of the yard. This seems a sizable sale till Waldo Murphy, the lanky, sociable Yankee-Irishman, who is superintendent, tells you that this was about six months' business in pre-depression days. As we walked through the battery of 14 double retorts, each with a ten-cord daily capacity, all cold and quiet, he pointed out how easily and quickly they can be reconditioned, and enthusiastically outlined plans for revisions and rearrangements in the chemical plant.

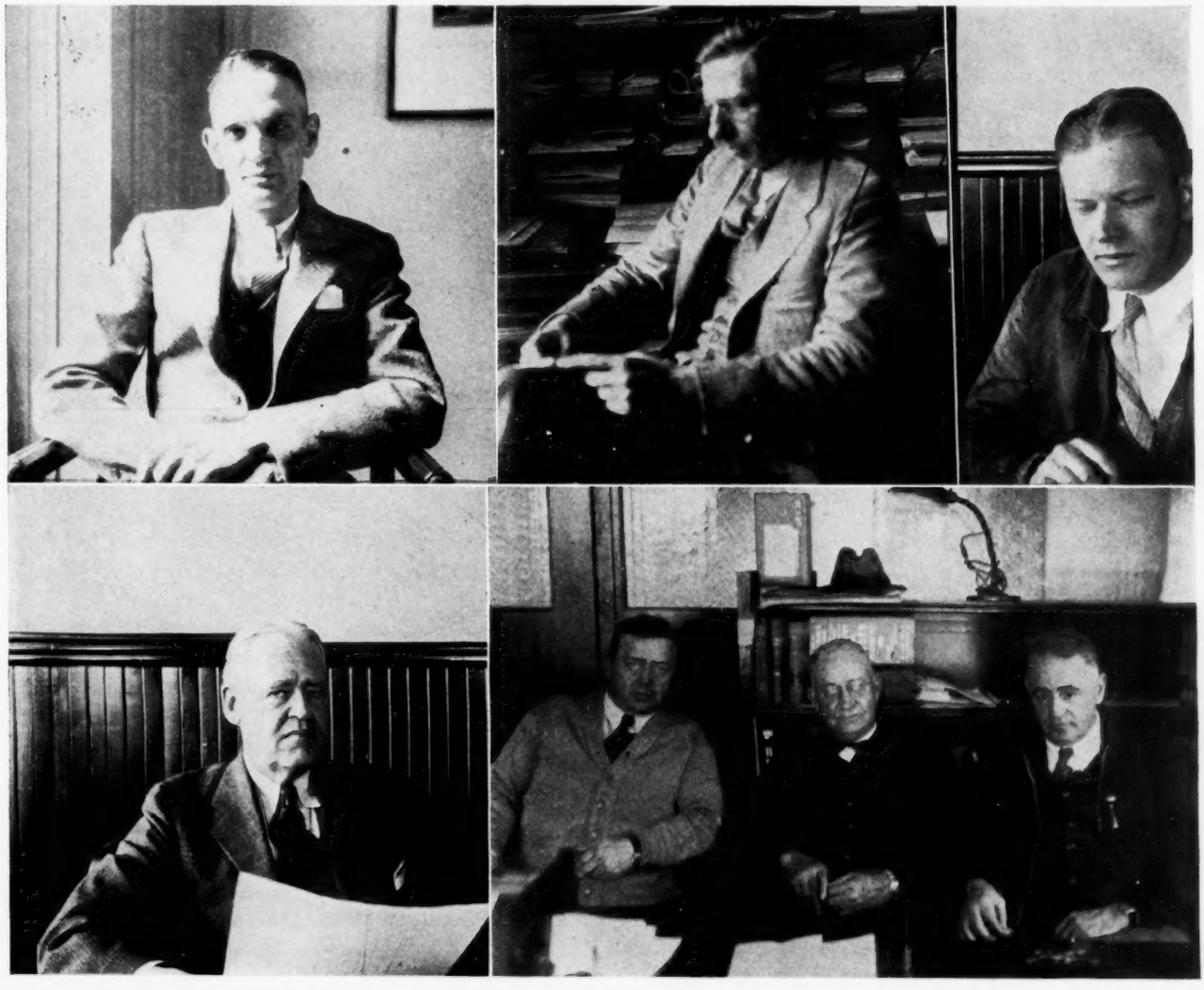
"A direct acetic plant is logical, and we'll straighten out our shipping facilities with some automatic loading and automatic bagging in the charcoal unit."

Across the Straits of Mackinaw, in the Lower Peninsula, the Antrim Iron Company began, over forty years ago, making charcoal iron. In 1902 they put in wood chemical recovery and sold the crudes to Berry Brothers, the varnish people, who erected a refinery almost next door. Back in 1911 Antrim took over this chemical plant; consolidated it with their own works; expanded it to 160 cords capacity. They are working today on forty-five thousand cords of chemical wood cut three or four years ago, which would deteriorate if stored much longer.

While the manager, L. S. Baldwin, and his assistant, my genial guide, Roy Nothstine, were telling the pros and cons of operating under N.R.A. rules, a thick-set man in a black and red mackinaw, with a field compass pinned on his lapel, came in and I was introduced to the woods boss, John C. McGregor. He sat quietly listening till I asked him a direct question.

"We get," he answered, "about a cord and a half of so-called chemical wood, that is, slabs and edgings, the tops of good saw logs, and crooked or defective sticks, to each thousand feet of log measure, which is about half a cord more than the timber on the Northern Peninsula runs. Under the code we are allowed to cut only 467,000 feet monthly."

"Code restrictions plus restricted sales have given us our own relief problem," put in Mr. Baldwin, "and our company store has extended liberal credit to our people."



The men on the firing line of Michigan's wood chemical operations. Above, l. to r., E. T. Olsen, Chemical Superintendent, Cleveland-Cliffs Iron Co.; Waldo Murphy, University of Michigan man who "superintends" the Cadillac-Soo operation; A. H. Engelsen, Chemical Engineer, at Cleveland-Cliffs; below, R. W. Scott, who presides at the Marquette office of the same company; and Roy Nothstine, Superintendent, L. S. Baldwin, General Manager, John C. McGregor, Woods Boss, at the Antrim Iron Company's operation, near Mancelona, Mich.

General view of the extensive operations of the Newberry Lumber & Chemical Co., at Newberry, Mich., midway between Marquette and the Soo.

"A lot of our cutters," continued the woods boss, "come from the mountains of Kentucky. When they work, they are good woodsmen; but they are past masters of the art of stacking a cord of wood so you can drive a horse through it. They like to work on their own time so as to go hunting or fishing or berry picking when the spirit moves them, so the pay-basis has always been on the cord cut and stacked, which is four hours labor for a good man."

"Wood conservation," added Roy Nothstine, "is a question with about seventeen answers and none of them satisfactory. Thousands of acres of cut-over land are being turned back to the state for taxes which are so high it is commercially impractical for a company or an individual to attempt reforestation. Fire is the real thief, and it's 'most impossible to reforest with farms in timber areas."

"Some of the official conservationists," McGregor's good Scotch burr became aggressive—"advocate leaving a certain percentage of the twelve inch trees standing; but they reckon without our winter winds which rip a solitary tree of that size right out of our sandy soil. My own idea is that we should leave all trees four inches at the breast."

Plainly the wood chemical industry has other knotty problems besides the switching markets and new competition with which we are so familiar: other problems too than the diminishing demand for pig iron or even for ore, which Roy Nothstine summed up when he said, "What the steel industry used to make as thick as your wrist is now made of these new alloys as thick only as your thumb."

Not till a week later, in Cleveland, was the newest chemical solution of some of these problems expounded to me by the man who is putting these theories into practice at the Cleveland-Cliffs plant. At Marquette I had missed E. T. Olsen, and his associates were as communicative as the Sphinx about those new developments which first prompted my visit; but he himself, when we were able to sit down one rainy Sunday afternoon, was as frank as any chemical journalist might wish. Indeed it would not be fair to print all that he told. After we had gossiped about various chemical friends in common half an hour, I suddenly asked him point blank, "Say, Olsen, what about your new chemicals from wood?"

"Oh, we've just been trying to find out what you could see if you looked at wood chemicals from a brand new point of view." He grinned cheerfully, settled his tall frame into his easy chair, and locking his big, bony, capable hands across his knees, continued: "From a hundred pounds of hardwood you get say two pounds of methanol, and two and a half pounds of acetic acid. In solving the wood chemical puzzle most all the time and money have been spent to effect economies and increase yields of that four and a half pounds of products, which are both in head-on competition with synthetic processes. Our attitude is one of insatiable curiosity about the other ninety-five and a half pounds.

"There are some 26 pounds of charcoal, which we find in competition as fuel with coke; then 26½ pounds of gas, used for heating but with no chemical development; and 10 pounds of tar, used as a fuel and with very meager chemical development. So we first built a research laboratory and collected ten good chemists, mostly recruited from petroleum, gas, and consulting fields, to study these three raw materials of ours.

"At the same time I cast up our own assets and discovered that we have a virtually unlimited supply of timber and three company-owned hydroelectric plants generating plenty of cheap power. We have a stable, intelligent, decentralized labor force. And last but not least, we have an unlimited supply of pure water in Lake Superior that even in summer seldom gets above 10° C., a nearly perfect scrubbing or cooling agent.

"From our 113 tons of oven gas, which is about 70 per cent. carbon monoxide and the balance chiefly hydrogen, we are already manufacturing benzaldehyde (CO plus benzol). In other words we are making a commercial chemical out of what was formerly by-product heat worth about 80 B.T.U's. Out of the tar oil, worth as fuel say 2c a gallon, we are producing

by demethylation, pyrocatechol and other inhibitors. We are taking half the charcoal we produce out of the fuel class at $10 a ton, and activating it to two different grades, one for treating water and the other for purifying and decolorizing oils, chemicals and food products.

"That's the whole idea in a nutshell—to try to get more marketable products at better prices out of that hundred pounds of wood. What we've done is a start. There are a number of other interesting products we are working with, some of them new and others, old chemicals from new sources.

"Looking even further ahead, we have an additional objective beyond the possibilities of good-priced materials from the carbonization and hydrolization of wood. Timberland produces more cellulose to the acre and more cheaply than any other crop, and cellulose is a mighty interesting and valuable chemical raw material these days."

This curiosity about the chemical constituents of a cord of wood and their possibilities in new chemical combinations is by no means confined to a single group among the wood chemical producers, who generally recognize that their raw materials are the rich and still largely unexploited storehouse of chemical raw materials. They are attacking this problem from a number of different angles. Naturally enough this work is highly confidential; but, for example, it has been pointed out that the crude pyroligneous liquors contain methyl alcohol and acetic acid in practically the perfect proportions to produce directly methyl acetate. Other research is being conducted with acetone, now a generally discarded process, as the starting point.

No one can visit the wood chemical plants and come away without a very keen appreciation of their strong and firm economic foundation. They are producing chemical products out of waste materials, performing a useful conservation service. About them have been built up decentralized, industrial communities, and I do not doubt the statement that they own or control two-thirds of the land of the Northern Peninsula. This means two-thirds of the taxes, which means that they virtually support the schools and other public services of their districts. Accordingly, they furnish a living example of the very kind of decentralized industrial communities to which so many are giving friendly thoughts today. Well entrenched with a supply of chemical wood, especially where supported by lumbering or iron smelting operations, these enterprises are very far from dead, and I suspect it is going to be very hard to kill them.

Snow and cordwood—with the Antrim Iron plant in the distance.

Chemical Chronology 1934

January James M. Doran, Commissioner of Industrial Alcohol, resigns to become Supervisor, Distilled Spirits Institute. ¶ Production of acetamide begins in industrial quantities. ¶ Phosphate rock producers oppose proposed shipping code. ¶ Major George L. Berry succeeds Gen. Williams as NRA administrator chemical codes. ¶ Lester Bacharach forms Empire Distilling. ¶ Heveatex Corp. (latex) opens a New York office, Dr. W. J. R. Hauser in charge. ¶ Cyanamid signs 20 year lease in Rockefeller Center. ¶ American Aniline Products celebrates 25th birthday. ¶ Shellac prices skyrocket as London syndicate corners stocks. ¶ Quicksilver producers ask higher tariff, alleging higher NRA costs. ¶ Chemical common stocks advance sharply. ¶ U. S. Court Customs and Patent Appeals decides phthalic anhydride suit for Alfred Wohl. ¶ Archer-Daniels-Midland buys American rights to German continuous solvent process and will offer a new soybean oil meal. ¶ Nat'l Paint, Varnish & Lacquer Ass'n names Reuel W. Elton secretary. ¶ New Chilean law creates Chilean Nitrate & Iodine Sales Corp. ¶ New vice-presidents: John W. Boyer, Filtration Equipment Co.; Wilhelm Krumbhaar, Beck, Koller; W. S. Edgar, R. B. H. Lacquer Base Co. ¶ Deaths: Fritz Haber (nitrogen fixation); Henry Pfaltz, former president Pfaltz & Bauer; Dr. Edward W. Washburn, chief chemist Bureau of Standards; George W. Kenyon, former chairman, the old General Chemical Co.; Andrew Squire, Carbide director.

February President signs the Chemical Alliance Code February 10. ¶ George H. Mead (Mead Paper) appointed administration member of the Alliance Code. ¶ Lewis H. Marks reelected president Chemists' Club (N. Y.). ¶ Lye and carbon black codes signed. ¶ R. M. Banks (Cyanamid) heads new Synthetic Resin Association. ¶ Sharples Solvents' new Wyandotte, Mich., plant opens. ¶ C. P. Gulick (Nat'l Oil Products) reelected president Sulfonated Oil Manufacturers' Ass'n. ¶ Davison Chemical receivers win a claim of $3,615,108 against Silica Gel. ¶ Leading chemical stocks decline. ¶ Hercules introduces a new resin "Bresin". ¶ Heyden Chemical declares 10c extra. ¶ February consumption of chemicals tops January. ¶ Monsanto notifies stockholders of proposed capital

stock increase. ¶ Jacques Wolf announces new "one bath degumming and dyeing process" for silk hosiery. ¶ First sulfur shipped from Freeport's new Louisiana plant. ¶ Deaths: Dr. Ernest Cadgene, founder of Lyons Piece Dye; Dr. William R. Cathcart, Corn Products' technical director; Thornton H. Bissell, International Nickel's well-known advertising manager; Orton G. Dale, chemical consultant.

March New attendance record (1,200) at the 9th annual dinner of Drug, Chemical and Allied Section, N. Y. Board of Trade. Postmaster James A. Farley is the speaker. ¶ Dow bromine plant at Wilmington, N. C., operating successfully. ¶ Robert I. Wishnick, president, Wishnick-Tumpeer, returns from European trip. ¶ John A. Chew becomes a farmer, acquiring "Ellwood" estate near Berryville, Va. ¶ William B. Bell speaks at hearing opposing proposed Wagner Labor Bill. ¶ Executive Committee Chemical Alliance sets up necessary Code machinery. ¶ John Hay Whitney, noted sportsman, elected chairman Freeport Texas. ¶ Naval Stores control committee sets up a permissible market quota of 381,000 units. ¶ Cocoanut oil users fight imposition of a 5c tax. ¶ Russian potash arrives in this market. ¶ U. S. I.'s Glenn Haskell presides at alcohol producers meeting to draw up code. ¶ Dr. Walter S. Landis, Cyanamid, flays inflation before Wall Street Economists. ¶ Du Pont bonus plan approved by stockholders. ¶ Deaths: Charles D. Wood, Grasselli sales manager; Eustace H. Gane, founder of Gane & Ingram; Fred. E. Fenton, Hercules' assistant treasurer; J. B. Eakins, president J. S. & W. R. Eakins; William H. Scheel (gums).

April Chemical Alliance announces 349 members. ¶ Prominent chemical executives protest in Washington hearing against the proposed stock exchange regulation bill. ¶ Frank Lovejoy new Eastman president. ¶ Harry L. Derby represents the industry before the Senate Finance Committee, opposing proposed reciprocal tariff. ¶ Monsanto starts building a $200,000 office building, St. Louis. ¶ Edmund Billings elected director Godfrey L. Cabot. ¶Dean Clark selected code director Chemical Alliance. ¶ Cyanamid moves to Rockefeller Center. ¶ Catalin (cast phenolic resins) wins consent decree in patent suit against Marblette. ¶ Cyanamid enters the crude rubber field. ¶Southern Chemical is formed by Cyanamid and Pittsburgh Plate Glass. ¶ Glenn Haskell elected U. S. I. director. ¶ Williams Haynes, publisher of CHEMICAL INDUSTRIES, and George Hasslacher complete 7,000 mile trip through new southern chemical operations. ¶ Allied stockholders' meeting is "love feast". ¶ U. S. I. stockholders approve compensation plan for executives. ¶ Du Pont reports first quarter earnings ($11,628,154) double the corresponding period of a year ago. ¶ Union recognition strike at Nat'l Aniline's Buffalo plant. ¶ Nearly all quarterly earnings statements indicate improvement over the same period a year ago. ¶ Business generally shows further improvement and chemical shipments are heavy. ¶ Deaths: Forest Shattuck, well-known Solvay Process engineer; William C. Procter, chairman of P. & G.; John C. Robinson, former Merck employee; E. V. Benjamin, Bay Chemical president; Dr. David E. Reid, Eastman lab. chief; Sir Max Muspratt, British chemical industrialist.

May Michigan Alkali buys into Natural Soda Prods. Co., and Solvay announces new plant at Baton Rouge. ¶ Harry Curtis, in an exclusive interview with CHEMICAL INDUSTRIES, confirms TVA will manufacture phosphates not nitrates at Muscle Shoals. ¶ Calco chief chemist, Crossley, represents U. S. chemists at the Madrid International Conference. ¶ Newark (N. J.) Museum opens a "Miracles of Chemistry" exhibit. ¶ Synthetic products attract attention at Fashion Group's exhibit. ¶ Dorr-Oliver dissolved, companies reverting to independent status. ¶ Pierre S. du Pont writes a minority report of National Labor Board decision in the National Aniline's labor dispute ordering company to enter into a contract with A. F. of L. local in Buffalo. ¶ Harvard's chemist-president, Conant, receives the American Institute of Chemists' Medal. ¶ Substantial increases in chemical imports and exports. ¶ Shellac prices again fly high as the London syndicate again becomes active. ¶ Code for the agricultural insecticide and fungicide industry becomes effective. ¶ President Roosevelt asks Congress, but without avail, to re-consider the cocoanut oil tax. ¶ American and North African phosphate producers reported to reach export agreement covering the world, exclusive of the U. S. ¶ Stock market sags and business activity shows definite signs of recession. ¶ Deaths: Herman A. Metz, colorful leader of dye importers; David Wesson, pioneer in cottonseed oil products; Carl Olaf Lundholm, explosives chemist; Jay Morton, pres. Morton Salt; Andrew White Crookston, developer North African phosphate; Dr. William Hoskins, Chicago chemical consultant.

June M.C.A. meets at Sky Top: all officers reelected, and W. B. Bell presented CHEMICAL INDUSTRIES' Medal for distinguished economic services to the industry. ¶ Potash prices sag in severe competition. ¶ Francis P. Garvan, Chemical Foundation head, attacks internationalism and bureaucratic control over industry in a blistering letter to Mordecai Ezekiel, economic adviser to Secretary of Agriculture. ¶ Bayer Co. is charged by U. S. Trade Commission with misrepresentation in sale of aspirin tablets, recalling bitter fight over trade mark "aspirin" in the early twenties. ¶ Alfred L. Loebenberg elected Barrett vice-president to act as assistant to president. ¶ Horace Bowker elected chairman American Agricultural Chemical. ¶ Theo. W. Sill joins Monsanto sales staff. ¶ Cyanamid buys Burton Explosives. ¶ Naval Stores industry dissatisfied with control and allowable units increased to 436,500 units. ¶ Sulfonated oil code is signed. ¶ Shellac prices weaken. ¶ Catalin files suit against Catalazuli, alleging infringement of patents covering cast phenolics. ¶ Rustless Iron wins rustless iron patents suit in Federal Court of Appeals 4th District; American Stainless Steel and Electrometallurgical alleged infringement by Rustless Iron. ¶ Business continues to register further declines. ¶ Deaths: W. B. Bader, Solvay chemist, killed in plane crash; E. S. Dickens, Beck, Koller sales manager.

July Commercial production of "Salt-Ice" announced to compete in certain fields with solid CO_2. ¶ Glidden wins suit brought by the Government alleging diversion of alcohol and asking for $2,200,000. ¶ Texas Gulf Sulphur and Gulf Oil come to new terms on the lease on Boling Dome. ¶ Veteran S. D. Crenshaw becomes chairman Phosphate Products: John Maxwell president. ¶ Code authority of agricultural insecticide industry declares emergency in lead and calcium arsenate markets because of price cutting. ¶CO_2 and water softener codes signed. ¶ Potash prices slashed further as competition becomes more acute. ¶ Tannin Corp. offers "Mytan", a new solid Myrobalans extract. ¶ First six months earnings leading chemical companies show gains over the corresponding 1933 period. ¶ Decline in general business and in demand for chemicals is more than seasonal and outlook becomes discouraging. ¶ Chilean nitrate and European synthetic nitrogen producers reach agreement in Paris after negotiation. ¶ International chemical trade in the past 6 months featured by further spread of nationalism and rise of Japan and Russia as exporters, as detailed in report by Concannon, chemical chief, Bureau of Foreign and Domestic Commerce. ¶ Deaths: George Vernon Sheffield, vice-president and treasurer of Innis, Speiden & Co.; Franklin Black, treasurer Charles Pfizer; William Hastings Bassett, president-elect of the American Association for Testing Materials; Col. William H. Walker, former partner of Arthur D. Little; Col. W. C. Hayes, Carbide treasurer.

August U. S. official chemical import-export figures for 6 months show substantial gain. ¶ American Cyanamid & Chemical merges the activities of a number of additional subsidiaries. ¶ Capt. Joseph F. Battley in charge

new NRA division containing chemical, rubber, paint, fertilizer and allied codes. ¶ Anticipated upturn in chemical shipments fails to materialize. ¶ Michigan Alkali moves to Lincoln Bldg., N. Y. C. ¶ Cottonseed oil prices at new high levels and future's trading brisk. ¶ Textile strike affects adversely demand for dyes and chemicals. ¶ Jacques Wolf announces a new one-bath water repellent. ¶ Nitrate prices for the new season announced at reduction of $1 a ton. ¶Du Pont plans manufacture of crystal urea at the Belle, W. Va., plant. ¶ Chemical common stocks slightly higher. ¶ Companies dividend extras include du Pont, Archer-Daniels-Midland; companies increasing dividend rates include United Carbon, Columbian Carbon and Spencer Kellogg. ¶ Glidden merges naval stores subsidiaries into Southern Pine Chemical. ¶ Deaths: Harold I. Hill, Celluloid vice-president; Edward A. W. Everitt, former Hercules employee and discoverer of "Cordite"; Samuel M. Moneypenny, former member of H. J. Baker & Bros.

September Senatorial Committee investigating the munitions industry calls the du Ponts. ¶ A. C. S. plans New York City meeting April, '35 to celebrate the 300th anniversary establishment of chemical industry in America, at which economic and business subjects will be stressed. ¶ Union Solvents' stockholders sue officers and directors, alleging misuse of funds and property. ¶ Calgon begins to market sodium metaphosphate. ¶ John Vaccaro succeeds Arthur Barba, Sr., as president Jefferson Lake Oil Co., sulfur producer. ¶ Samuel H. Bell, formerly with Koppers, forms own company in Pittsburgh, to handle coal tar chemicals. ¶ Cyanamid merges subsidiaries Chemical Engineering and Chemical Construction, new company known as Chemical Construction Corp. ¶ Duval Texas Sulphur starts a new plant at Boling Dome. ¶ Hercules Powder announces "Tornesit" (chlorinated rubber) will be made in this country in a new plant. ¶ Stock market shows losses for the second consecutive month. ¶ Earnings of fertilizer companies improve. ¶ General Potash, a new producer in the southwest, registers with Federal Trade Commission and its issue of $600,000 common stock approved. ¶ Industry generally makes slight gains, but chemical shipments below seasonal expectations, largely because of the nation-wide textile strike. ¶ Further weakness appears in the acetate of lime market with surplus stocks heavy. ¶ Deaths: Henry O. Herford, Calco Chemical export manager; William J. Ward, Merck assistant sales manager; Charles Robert Rosevear, of Thurston & Braidich.

October Chemical code costs 6 months, $12,000. ¶ Elon H. Hooker represents American industry at the opening of "The House of Chemistry", in Paris. ¶ Prof. Friedrich Bergius celebrates his 50th birthday. ¶ Supreme Court refuses Singmaster writ certiorari delustering suit. ¶ James E. Moul, president of Turbo-Mixer, elected president Chemical Engineering Equipment Institute at annual meeting New York City. ¶ Harry L. Derby heads the chemicals and paints division, N. Y. Citizens Family Welfare Committee in drive for $2,000,000. ¶ Du Pont announces $100,000 medical laboratory to study industrial hazards. ¶ A. Cressy Morrison, Carbide, heads finance committee for Unemployment and Relief of Chemists and Chemical Engineers in Metropolitan area. ¶ Innis Speiden makes liquid carbonate of potash. ¶ New England Alcohol, Monsanto's alcohol subsidiary, starts manufacture solid and liquid carbon dioxide. ¶ Southern Alkali's Corpus Christi plant opening brings 500 guests to big party. ¶ Manufacturing Chemists' Association helps obtain labelling agreements on carbon bisulphide and aniline oil, similar to one for chlorinated compounds approved by Public Health Service officials. ¶ Mathieson Alkali takes space in the Lincoln Building (N. Y. City) for executive offices. ¶ Solvay Sales opens Houston, Tex., office. ¶ Merck & Co. grants several research fellowships. ¶ Contract prices for 1935; naphthalene lower; chlorine is 15c higher; soda ash and caustic at present levels. ¶ Dr. Henry A. Gardner, scientific director National Paint, Varnish and Lacquer Ass'n, suggests use of oiticica oil in paint formulation, following a trip to Brazil. ¶ Dyers' strike in Paterson and Passaic district. ¶ Chemical common stocks advance, despite losses in the general group. ¶ American I. G. declares an initial $2 dividend. ¶ Monsanto declares 25c extra. ¶ General Chemical's suit against Standard Phosphate & Acid, alleging infringement famous Slama & Wolf sulfuric acid catalyst patents, dismissed. ¶ Celluloid charges patent infringement on laminated glass against Libby-Owens-Ford. ¶ Deaths: Ludington Patton, vice-president Pittsburgh Plate Glass; Dr. Samuel P. Mulliken, M. I. T. chemistry professor.

November Chemical Alliance's annual meeting attracts large gathering leading executives to New York City: all officers are reelected. ¶ Natl. Industrial Conference Board survey shows that the chemical industry pays "better than code wages". ¶ Francis P. Garvan attacks trade reciprocity agreements at hearings on proposed Belgian treaty. ¶ Lammot du Pont suggests elimination of excessive war profits in letter to Senator Nye, chairman of the Senate's munitions investigating committee. ¶ Harry L. Derby, president, American Cyanamid & Chemical, speaks before the Salesmen's Association at first of a series of luncheon meetings. ¶ Honors: Columbia's Urey (heavy water), Nobel Prize in chemistry; Dr. Floyd Metzger, Air Reduction, the Chemical Industry Medal; Carbide's George O. Curme, Perkin Medal; Dr. Jacob Lipman, Chandler Medal. ¶ Dow re-christens iodine producing subsidiary Io-Dow Chemical Co. ¶ Bichromate prices for 1935 unchanged. ¶ Opening of Mathieson's Lake Charles alkali plant scheduled for December, postponed until February. ¶ Consumption of textile chemicals increases as strikes end. ¶ Federal Oil Administrator Ickes threatens nationalization of industry before annual meeting of American Petroleum Institute. ¶ Alcohol code becomes operative. ¶ Trading in principal naval stores centers at a standstill four weeks while buyers and sellers cannot agree on prices. ¶ Atlanta fertilizer meeting discloses optimism prevailing among producers. ¶ Fertilizer exports first 9 months show substantial gains over the same 1933 period. ¶ Business outlook becomes again more encouraging, chemical shipments expand, chemical common stocks participate in a general price advance. ¶ Extra dividend declarers include du Pont, Great Western Electro-Chemical, Heyden, Hercules, Glidden, Devoe & Raynolds: American Cyanamid declares a ten cent dividend. ¶ Deaths: George E. Fisher, Grasselli vice-president; George Browne Cowper, Pure Carbonic vice-president; E. C. Holton, chief chemist of Sherwin-Williams; Lyman O. Fiske, Chemical advertising consultant; Dr. Karl von Linde, liquid air technologist.

December Insecticide and disinfectant manufacturers debate code benefits at annual meeting in N. Y. ¶ William B. Bell, Cyanamid president, helps frame industry's plan for recovery at National Association of Manufacturers and U. S. Chamber of Commerce meeting of our leading industrialists at White Sulphur Springs to formulate plans for co-operating with the Government. ¶ William H. Nichols' Medal goes to Father Julius A. Nieuwland of Notre Dame, in recognition of his work in synthetic rubber. ¶ Francis P. Garvan, Dr. Charles H. Herty, and Maurice Poucher ("the three musketeers"), honored at a large Chemists' Club dinner in connection with the S.O.C.M.A. annual meeting. ¶ Mr. Garvan receives from Dr. Herty the first skein of synthetic yarn made from slash pine at the Savannah laboratory. ¶ Cottonseed oil markets continue to go into new high ground. ¶ Contract season continues without spectacular happenings; prices remaining for the most part stable. ¶ Firm of Charles L. Huisking celebrates 25th anniversary. ¶ L. W. Douglas, former Director of the Budget, joins Cyanamid as a vice-president. ¶ Deaths: Edwin Binney, head of Binney & Smith.

American Chemical Industry Makes Its Own Recovery

DURING 1934, while general American industrial activity slumped down from the feverish advances of the last half of 1933, and has only partially recovered during the final quarter, the American chemical industry again demonstrated rather impressively its exceptional stability. Throughout the depression, American chemical companies have established four unique records: 1, chemical prices are actually below 1914 averages; 2, at no point has chemical production dropped below 50 per cent. of 1929 and is probably, at the present time, about 80 per cent.; 3, employment in the chemical industry has stood considerably higher than in any other large manufacturing group; 4, the chemical industry has paid plant wages about 15 per cent. higher than the average of all American industry. Although selling at prices below pre-war and paying higher-than-average wages, nevertheless the leading chemical companies have established enviable records of earnings.

Searching out the causes of this apparent economic paradox, it appears to arise from low prices and wide markets. Certainly the deflation of chemical prices has proceeded very much further than those of most other manufactured goods, a result not of distress and weakness but of technological improvements which vigorous competition has passed promptly along to the consumer. The low price of chemicals has prompted during these difficult times use of all sorts of synthetic materials and of many chemical processes in competition with natural raw materials and mechanical operations. Thus, in a thoroughly practical way, the chemical industry stands today as a demonstration of the best theoretical working of free competition and individual initiative.

Measured by the yardstick of earnings, American chemical companies have built well upon these solid foundations. Chemical balance sheets show increased figures for total sales and net profits throughout the first three-quarters of the year. There is no reason to believe that the last quarter figures, when issued, will change the record.

Increased earnings have naturally meant increased dividends. Monsanto, which in 1933 reported the largest sales of its history, has done even better this past year, and declared 100 per cent. stock dividend, thus capitalizing over four million dollars of its surplus, while at the same time increasing the current annual dividend from $1.25 to $2.00 on the basis of the old share issue. Dow has not only retired $100,000 of six per cent. notes, but also declared a 50 per cent. stock dividend, while maintaining upon the new issue, the old dividend rate. Du Pont has increased the annual dividend from $2 to $2.50 and declared 65 cents extra. Union Carbide increased the regular quarterly dividend from 25 cents to 35 cents, and American Cyanamid has paid 25 cents, the first dividend since July of 1930. Westvaco has retired $88,000 of 5½ per cent. debentures; United Carbon has increased its annual dividend from $2 to $2.40; Columbian Carbon, besides declaring an extra dividend of 25 cents per share, has increased the regular dividend from 75 to 85 cents. Heyden Chemical Company has declared extra dividends at 35 cents, and the American I. G. (organized in 1929) has declared an initial dividend of 50 cents a share.

These figures, taken almost at random from the financial records of the industry, explain why, in several slumps of the stock market during the past year, chemical securities have run counter to the downward trend. However, these financial figures are by no means the sole evidence of the robustness of the American chemical industry. The past year has seen a very great plant expansion. In fact, it is almost a safe generalization that there is hardly a chemical operation in the country where there has not been at least some unit overhauled or rebuilt, some new apparatus installed, some new process put to work.

Outstanding among these accomplishments is the bromine plant of the Ethyl Dow Corporation at Kure Beach, near Wilmington, N. C. Handling 37,000,000 gallons of sea-water a day, this plant is extracting 15,000 pounds of bromine by the chlorine substitution method, and converting it immediately into di-ethylene bromide, the entire output being shipped by barge through the Inland Waterway to Wilmington, Del., to the Ethyl Gas Corporation. Operations were begun in April, and the second month the plant produced 101 per cent. of its projected capacity—a record of carefully planned engineering which will doubtless stand

for a long time to come. With such a vast quantity of sea-water going through the works daily, many a wild story has been revived in the newspapers of the possibilities of extracting gold along with bromine, but although perfectly practical from the chemical point of view, such an operation proves utterly impractical from the economic point of view.

Although not a new process, nevertheless the new soda-ammonia plant of the Southern Alkali Corporation, at Corpus Christi, Texas, is of keen interest commercially as the first of the three new alkali producing units in the far South. This southward trek of the alkali companies, into a territory where there is but a very limited consuming market, has aroused great curiosity and stirred lively debate as to its soundness. The movement was begun by Southern (as yet the only plant in actual production) and a location in the South was selected because of cheap power (natural gas, owned by the company) abundance of salt (piped by gravity 43 miles) while a deepwater location on Corpus Christi Bay offered the opportunity of water shipment to the eastern market at freight rates competitive with the alkali plants at Niagara Falls and near Detroit. This enterprise brought to a head the plans of Mathieson, long dominant in the southern market, to build an ammonia-soda plant on property they have owned for some time in Lake Charles, Louisiana. This second plant was followed later in the year by Solvay's announcement to build at Baton Rouge. Both of these plants are expected to be in operation shortly after the first of the year.

Outstanding Sulfur and Solvents Developments

Two other important new plants, in widely separated fields, although built in 1933, began operation early in 1934. The Grande Ecaille plant, on the Delta of the Mississippi, of the Freeport Sulphur Company, made its first shipment last January, and the same month the new plant of the Sharples Solvents Corporation, transplanted from Belle, West Virginia, to Wyandotte, Michigan, with a yearly capacity of a million gallons of synthetic amyl alcohol, got under way. The excursion of the American Potash & Chemical Corporation, at Searles Lake, Calif., from borax and potash to salt cake and soda ash, is one of the newest and most interesting operations. The same company has just installed a much improved potash refining operation, while the building of a new refinery at the Potash Company of America's mine, near Carlsbad, New Mexico, and the doubling of the refinery built last year by the United States Potash Company, in the same field, all indicate plainly a widening of the scope of our potash activities to the chemical as well as the fertilizer markets.

Of plants now building, but not yet completed, the most important is the $10,000,000 project of the Carbide & Carbon Chemicals Corporation, at Whiting, Ind., where they will work up the hitherto waste gases of the Standard Oil of Indiana petroleum refineries into a similar line of aliphatic chemicals as produced by them now at Charleston, W. Va. At Bound Brook, N. J., the Calco Chemical Company, subsidiary of American Cyanamid, has carried on an active building campaign, collecting at one point a number of scattered small plants, which they have consolidated during the past five years. Prompted doubtless by the difficulty of importing with a "60 cent-dollar," the General Aniline works in New Jersey have been expanded, and manufacturing operations are evidently to be on a larger scale in this country.

New Research Laboratories

Beside these additions to our plant equipment, 1934 has witnessed the building of a number of new, modern laboratories. Most notable of these are the splendid building at Niagara Falls, to which Carbide & Carbon have transferred the research work previously carried on at Long Island City, and the new pharmaceutical research laboratories of Eli Lilly Company, at Indianapolis. The year has also been distinguished by the erection of a number of extremely interesting semi-plant scale laboratories. Dow, at Midland; Niacet, at Niagara Falls; and Sharples, at Wyandotte, have all put up special buildings, equipped fully with small size, but complete unit apparatus, in which to carry forward research from the test-tube stage. All of these very substantial investments in research and experimental equipment proclaim emphatically the progress which the American chemical companies see coming in the near future.

An unusually large number of new products, new processes, and new adaptations to the American market of foreign processes and products, have been evidence of progress this past year. The Du Ponts, at Belle, W. Va., will produce, this year, crystal urea, the first offered commercially from an American source. Despite the exceptional difficulties in its manufacture, sodium metaphosphate, heralded for boiler water treatment and as a detergent in commercial laundries, has appeared on the market. From two different sources liquid potassium carbonate is now on sale, and synthetic butyric acid, advertised "so high in quality, so low in price, that it can be used for making attar of roses or lacquer plasticizers," has become a commercial commodity. Hercules will shortly be in domestic production of Tornesit, the chlorinated rubber coating and impregnating material; while the Swiss oil extraction and purification process of the Extractochemie has just gone into operation in Georgia.

In this connection, it is interesting to note a lively interest in both tung and soyabean oils. Tung tree orchards have been growing slowly for the past ten years in northern Florida, southern Mississippi, Alabama, and Louisiana, but the past twelvemonth has seen a very active revival of interest in these trials, due to the fact that from the experimental groves

sufficient quantities of tung oil are being pressed to become of actual commercial interest in this country. With his usual shrewd and effective publicity, Mr. Ford has done a great deal for the soyabean. While this work is still distinctly in the experimental stage and quite far behind the tung oil developments, nevertheless since the fatty oils are one of the essential chemical crude materials which the United States has, in the past, imported largely, these interests have a sensible foundation, and they are particularly intriguing at the present time as offering a means of diversifying farming in what have been, in the past, one-crop areas.

Consolidations

During the past two years, the pressure of the depression has induced further consolidations among the chemical companies. American Cyanamid, while it has expanded by acquiring the Burton Explosives interests, and establishing a new department to handle crude rubber, has assiduously simplified its own internal organization. The outward and visible sign of this centralization is the American Cyanamid & Chemical Corporation into which have been brought all of the activities of nine subsidiary companies. The Texas Gulf Sulphur Company has bought for 1,300,000 shares of its own stock the Gulf Oil interests in their Boling sulfur dome, which they have been working for the past five years. Expansion of the Monsanto interests into synthetic resins from petroleum bases, forecast by the organization of the Monsanto Petroleum Chemical Company, in alliance with Thomas & Hochwalt, taking over the Dayton Synthetic Company.

In contrast to its predecessor, 1934 has seen the start of a number of entirely new chemical enterprises. Among the most important of these is the Empire Distilling Corporation, organized by Lester Bacharach with Dr. Adolf Pacak as its technical head, entering the alcohol field with a distillery in Philadelphia. Of quite a different character is the new Potato Products Company in Atlanta, Georgia, which will manufacture starch from sweet potatoes, a project more vigorously advocated by Government agricultural experts, and one which the early completion of the experimental plant will see thoroughly tested out commercially. A good deal of interest and some curiosity has been aroused by the purchase of the Natural Soda Products Company, working brine lakes in the far west, by the Michigan Alkali Company, which with Diamond Alkali remain today our outstanding privately-owned chemical enterprises.

The general course of the chemical markets throughout 1934 may be well characterized as steady. There have been certain weak spots where super-competition has developed, as in alcohol, trisodium phosphate, and potash. Early in the year potash was subjected to considerable pressure from imported materials, particularly from Spain but also from Russia; but the situation appears, at the close of the year, to have become more stabilized. The two new mines in New Mexico are both now active producers, and with the output from Searles Lake, American potash independence has been finally and unequivocably declared. Generally speaking, the entire fertilizer market has been satisfactory to producers, and the earnings of the "Big Three," which for the fertilizer year of 1933-34 for the first time in several seasons showed substantial profits, is fair indication of this condition. The heavy chemical market has been remarkably stable throughout the year, with a slight tendency towards rising prices. The contract season of the past fall has been remarkably good, consumers apparently being more willing than in several years past to secure supplies for 1935 on a definite basis as to price and delivery. Significantly, the fine chemical market has shown a well sustained demand in the medicinal field. Renewed activity in the automobile, the paper, rubber, and leather industries has had a very wholesome effect upon chemical prices and production deliveries, and with the exception of the dyestuff group — thanks to the textile industry's great difficulties—the current chemical demand is active.

Chemical Exports and Imports

Foreign trade, both export and import, shows a remarkable upswing. While the final figures are not available, it appears not unlikely that our total chemical shipments abroad will increase about $50,000,000 over 1933. Imports are probably in the neighborhood of $28,000,000 greater than a year ago. These sizable figures represent roughly a 30 per cent. increase of both exports and imports. Exactly what this increase in dollars represents in tons and gallons is a little difficult to estimate, in view of the depreciated value of the gold dollar and the inadequacy of our statistics at this point; however, it is doubtful if there has been any very material increase in the actual quantities of chemicals imported, although this would certainly not hold true as to our exports.

The patent situation, both in the Courts and in the Patent Office, remains confused and unsatisfactory. A serious effort has been made in Washington to speed up the issuing of patents; but it is reported that this is being accomplished somewhat at the expense of careful searching and cross-checking of claims. In the Courts a trend towards a stricter interpretation of the disclaimer is noted with dismay. While it has always been held proper to await disclaimer until the final court has rendered its decision, the recent holdings are that a disclaimer must be made within thirty days, regardless of the fact that the case may be still appealed, or in certain instances may actually be before two courts. Obviously this creates confusion and in extreme cases amounts to the virtual destruction of patent claims. Of the patent litigation of 1934, a case with most far-reaching effects was the so-called Du Pont lacquer suit, which never reached a final court decision, since the chief contestants, the Glidden Com-

pany and the Jones-Dabney Company, withdrew and accepted licenses to operate under the low viscosity patent held by the Du Ponts. Similar licenses granted generally and upon generous terms to responsible companies throughout the industry have been a material assistance in establishing competition in the lacquer industry upon a firmer foundation of costs. A not-dissimilar situation is being built up in the glyptal resin field. The basic patents have long since expired and there is the complicated tangle of conflicting claims, based chiefly upon patents covering the use of side acids incorporated into the phthalic-glyceride chain, and owned by General Electric, Ellis-Foster, the Du Ponts, and others. These interests are negotiating a patent convention which would clear the manufacturing situation of these possible conflicts, but there is undoubtedly serious litigation abrewing.

The use of these glyptal resins has been an outstanding development of the synthetic coatings field. Ford has been followed by a number of other motor car makers in his use of various modified glyptal lacquers in the place of nitrocellulose coatings. Here, as especially in the field of impregnated fabrics, advances of great importance are coming to fruition. Both the formulation of new synthetic coatings materials and the technique of their application are undergoing extremely rapid and significant change, out of which a progress, just as tangible as followed the first application of nitrocellulose, appears to be scheduled for 1935.

And last, but very far from least, we come to the repercussions of the New Deal upon the chemical industry. The National Recovery Act stimulated the revival in 1933 of the old Chemical Alliance, in an effort to bring all of the chemical industries into one single association for purposes of dealing with the Government on the code and other matters. A basic code for the chemical industry secured through the offices of the Alliance was approved February 2nd. This code is extremely simple. It concerns itself only with hours and wages, and contains several safeguards of constitutional rights and recognizes the much debated "merit clause" in labor relations. In all these respects, it is considered more advantageous to the industry's broader interest than many more narrowly drawn codes. The basic chemical code provides for sub-codes, and a great number of these have been prepared, many of them covering in great detail trade practices and attempting to set up control over prices and competitive conditions.

It is extremely difficult, at the moment, to judge fairly what effect these codes have had upon chemical business during the past year. Fundamentally, the wages of the chemical industry were but slightly affected. There were, however, serious readjustments necessary in plant shifts to comply with the forty-hour week provision. The basic code has had no effect upon the competitive conditions, nor was it designed to do so; and yet very marked differences of opinion are boldly expressed among the various branches of the industry as to how successful the sub-codes have been in this respect. The fertilizer industry officially pays lip-service to the National Recovery Act for benefits received; but it is certainly a very open secret that competition has been but little less unscrupulous than in years past. A similar situation has developed in the paint, varnish, and lacquer industry. It is too early, at this writing, to know how successful the establishment of a basic price by the Code Authority of the Agricultural Insecticide Industry on arsenate will prove to be; but most branches of the industry report that their proverbially keen competition has not been greatly tempered by code restrictions.

The much disputed 7A clause of the National Recovery Act, with its illy defined collective bargaining phrases, has caused comparatively little difficulty in the chemical industry. Chemical plant workers have never been organized and apparently do not yield to the blandishments of the American Federation of Labor. The one serious strike in the entire industry during the past year was due neither to hours, nor wages, nor conditions of work, but raised the question of union recognition, an issue which the company fought to a successful issue.

As the year closes, the President appears to be less interested in social reforms and more willing to allow industry to work out its own salvation. Since it has largely been his own experiments, that have frozen the confidence of business leaders, this swing to the right is taken, among our leading chemical industrialists, as a hopeful sign for the year to come.

Sugar—Synthetic Resin Production

The production of synthetic resins from sugar and formaldehyde has been patented in most countries (E. P. 208,193, 209,697, 271,146, 326,255) and *The Chemical Trade Journal* has digested the following from *International Sugar Journal*. On the semi-industrial process the reaction is carried out in a mixing machine which is oil-jacketed with condensers of copper or glass. The product obtained is a black, brittle, shiny, lustrous, but not porous, resin, with a melting point of 100° to 110° C. It should be mixed with a filler, such as woodpulp, asbestos, or mica. A hardening agent is added, and the product thoroughly mixed at a given temperature. From the mixer it goes to a ball mill, being ground to a fine powder, used for molding. This is carried out in an electrically heated press, in which the temperature for the setting of the product and also the pressure are controlled closely. Phenol-sucrose plastic is soluble in ordinary plastic solvents. It is very strong, and can be used for table-tops and other articles. Its electrical properties make it of use in the radio and electrical industry for the same purposes as other plastics. Being cheaper than certain other plastics tests were made with floor and wall tiles, also bricks for building purposes, results being very satisfactory. Strong panels were made from old filter-cloth impregnated with the solution. Some work has been done on a plastic from sucrose and aniline during recent years, the manufacturing process being much the same as with the phenol-sucrose resin; but the cost is higher, due to the aniline used. Plastics can be made from sucrose-formaldehyde and urea, which, if manufactured in the right way, have the same properties as glass, and can be given any color.

T. D. 4422

Hints on Depreciation for Industrial Taxpayers

By A. B. Hossack

American Appraisal Company

PLANT accountants and executives go to great trouble and expense, at least annually, to check all materials, work in process, etc., to be sure that the inventory facts support the books or that proper adjustments be made to bring the books into accord with the facts. The inventories are usually small in comparison with the investment in plant assets, yet they make no effort to check plant assets against costs on the books; and usually get quite indignant if anyone questions the correctness of the plant accounts.

What has this to do with Treasury Decision 4422? Merely this—all the Treasury Department in T. D. 4422 is intending to do is to get the property facts. If the facts support the deductions for the individual taxpayer that is all they ask. If, as is true in many cases, the facts warrant a decrease in the charge, then reduce it with good grace—you can't support a higher figure.

The recent Internal Revenue release regarding 4422 has been taken to indicate a backing down of the Bureau on depreciation matters. Personally I don't think so. There is no change as far as I have been able to ascertain. Requests for support of depreciation deductions are still going out. Agents are still questioning depreciation deductions.

Let us consider the three classes exempt:

(1) Those taxpayers whose returns show net losses after appropriate adjustments. Naturally the Treasury Department is not concerned with how much you increase your losses by excessive depreciation deductions. If you voluntarily deduct excessive amounts you have that much less for future recovery. If you haven't deducted enough, and still show a loss, they may later disallow your claims on the basis of the amount allowable during loss years, using your then claims to prove the amount allowable.

(2) The second class is taxpayers whose returns indicate clearly that only reasonable amounts of depreciation have been claimed. This definition has considerable leeway. What returns may indicate clearly that only reasonable amounts have been claimed? Every taxpayer thinks his claim is reasonable, if to admit otherwise means payment of additional taxes. It is the Internal Revenue personnel who will look over the return to determine if it clearly indicates a reasonable amount. If it does not in the judgment of the agent or Washington, then you will be requested to furnish the data. You might better get your facts so that you know your claims are reasonable.

(3) Third class—those taxpayers whose depreciation deduction is a very minor factor. Quite naturally the Treasury Department is not interested in such cases. T. D. 4422 was promulgated to produce substantial revenue. If depreciation is minor it will not go far to produce the 85 million additional taxes. If your depreciation, however, is a third, a half or more of the amount of your taxable income, don't think it is a minor factor just because it is small in comparison with your other costs of goods sold.

Depreciation has been one of the most abused of the important overhead costs affecting the profit and loss account. I am glad to note accountants are now giving it more attention. I haven't noted many earning statements reading "before depreciation and depletion" of late, have you?

Just to illustrate the importance of depreciation in relation to profit, I had tabulated for ten large corporations, whose securities are listed on the New York Stock Exchange, for the years 1926 to 1933 inclusive, the earnings reported also depreciation and depletion reported. I believe the figures will interest you.

Total net earnings	$3,000,000,000
Total depreciation	1,650,000,000

You will note depreciation was approximately 55 per cent. of net earnings.

In 1929, a year of high profits—	
Net earnings reported	$722,907,000
Depreciation reported	218,165,000
Ratio about	30%
Year 1933—	
Net earnings reported	$123,371,000
Depreciation reported	210,409,000
Ratio	170%

You can readily see how important from an income standpoint the proper treatment of depreciation is and

its effect on the profit and loss account. Do you think the Internal Revenue Department is unreasonable to want some proof that a deduction which will aggregate on the average fifty per cent. of the total taxable income from manufacturing concerns, is correct?

In the November issue of the National City Bank forecast, an interesting tabulation was published on manufacturing companies from which I would estimate the depreciation deductions to be over $2,000,000,000 average per year for 14 years, against the 14-year average of $54,000,000,000 gross income, and average taxable income of $3,578,000,000. Let us assume for a minute that during this period the depreciation deduction has averaged 15% too high. A reduction to a proper rate would mean $300,000,000 per year. A further decrease due to past excess of an equal amount might well carry forward for several years. Maybe their estimate of $85,000,000 additional tax is not outside the bounds of possibilities.

T. D. 4422 is for one purpose only—to increase the corporation taxes by decreasing the depreciation deductions allowed.

Proving Deductions

In the past, if you disagreed with the deduction allowed, in theory at least, you had to prove the deduction to which you were entitled, either by facts, by argument, or trying to reiterate your claims until accepted or some compromise was effected. True, this decision squarely puts the responsibility for supporting the depreciation deduction on the taxpayer, and the principal difference now, as I see it, is that the Treasury Department is asking for more facts and less argument. They are asking that the unrecovered balance of the depreciation base or the depreciation base less depreciation allowable, whichever is less, shall be fairly and rateably recovered over the remaining useful life of the property.

Many have written arguing that the depreciation deductions allowed in the past to industry in general have not been excessive. I have had many years contact with industrial plant accounts, depreciation reserves, and depreciation claims; and I am frank to say that in general my observation has been that the depreciation deducted for tax purposes has been in excess of that required by the useful life of the assets.

It is not at all unusual to find reserves built up particularly on equipment accounts of fifty, sixty and seventy per cent. or more, and still the machinery is reasonably modern for the purpose served, in good condition, and will remain in use for a considerable future period. Let me cite an example recently observed. A machinery account of a trifle more than $2,000,000, a reserve of over $1,500,000, annual rate 8%. An equipment account over $600,000, a reserve of more than $500,000, annual rate used 10%, and the plant in very good condition of upkeep and repair.

With such conditions confronting the Treasury Department's administrative personnel when they were searching for additional revenue, I am not particularly surprised that they felt that a proper future recovery of the remaining depreciation balances over the estimated future life would produce substantial additional amounts of income by reducing the depreciation allowances.

Management is of late more willing to consider depreciation as a matter of fact rather than as heretofore—as a matter of expediency.

Several factors may account for this change in attitude, including the following:

1. Profits have been curtailed or entirely disappeared, and depreciation is a burden which forms a large part of total fixed charges.
2. The present rate of government spending indicates that corporation taxes will remain in effect at present or higher rates for many future years, so that it is not so important in dollars and cents to obtain the deduction now as it was during the war profit period when much higher rates prevailed with the prospect for early reduction.
3. More publicity is being given to the proper accounting for so-called fixed assets, as well as legislative action such as the security bills.
4. Proper accounting to stockholders is considered more necessary than formerly. It is not customary now to see statements of earnings issued without reasonable provision for depreciation charges.

The attitude of management toward the recent Treasury Decision, as I have observed it, might be of passing interest. Probably all of you will come into one of these divisions.

Some are getting their houses in order in the belief that it is better to take the initiative at once and compile the facts than to wait for the demands of Washington or the Revenue Agent.

Some are indignant and are going to fight it out on the old lines until "doomsday." My opinion is that this attitude will only prevail until their depreciation deductions have been disallowed entirely or so radically cut that they will find it expedient to prepare their evidence.

Some are just doing nothing, waiting for the Department to crack the whip. Their headaches will come before long, depending of course on profits.

Some are trying to show it is impractical, too much work, etc., to compile the data and are trying to effect some compromise which they think, or hope, will be more advantageous to them than to compile the facts.

My advice is to get your property accounts in order and under control now. It is the safest procedure and ultimately the most economical. Determine what your depreciation allowance really is now when you have time to do so properly. It is rarely the case that a taxpayer cannot prepare sufficient data to be acceptable proof to the Treasury Department that proper deductions are reasonable. They are not unreasonable unless you are obviously stalling and avoiding a frank statement of the facts. The management that has adequate property records under control has no particular problem under T. D. 4422.

It is, however, surprising how many concerns, both

large and small, utterly fail to control their property accounts and many of the men in charge of the accounts frankly admit such lack of control. When I say "lack of control" I do not mean lack of any accounting record. Most concerns, since the institution of the income tax laws, have an accounting record. The record is properly added, balanced, summarized, and included in the financial or other statements, but still it may not be under control as I refer to it.

Let me cite an example recently coming to my attention. This concern has gross book costs, as per the accounts that were regularly audited, in excess of $10,000,000. Their present plant accounts had been set up in detail more than 25 years ago. They had recorded on a property record since the original start of the accounts, each item capitalized on the account, showing some description and the cost capitalized. Items, sold or otherwise disposed of, that were reported to the accounting department had been eliminated.

The additions were recorded each on a separate sheet in their detailed property record which sheets comprised over 150,000 items, and the total of these individual costs agreed with the gross cost on the company's books. However, over the entire 25-year period there had never been a serious attempt made to check the actual existence of property which the accounts purported to represent and control. A few half-hearted attempts had been made but abandoned each time with the excuse that the records didn't check.

Depreciation Problems

I actually found direct evidence that many items still on the accounts and on the detailed record had been used up in service. I found that in total their net depreciated costs as per their general accounts were undoubtedly conservative. They had depreciated at a rate which produced a reserve in excess of that required by the condition of property even allowing for reasonable obsolescence or lack of utility. However, I found that in setting up their depreciation schedule for tax purposes by years and average rate, that their balance to be recovered for tax purposes did not agree with the undepreciated cost, as per their general ledgers, by a substantial amount.

This is no exaggerated, isolated instance. It is rare in my experience that accounts carried forward on average rates really reflect the facts regarding the assets the accounts purport to control.

To meet the requirements of T. D. 4422 in such a case, and incidentally to bring the property accounts under control, I am outlining the procedure required. While every individual concern will have its own special problems, the plan, I think, is basically sound for most taxpayers who do not have property ledgers and individual control of plant assets.

Install a detailed property ledger to control the plant assets; that this property ledger be so compiled to permit periodical check of the existence of property and to provide for proper eliminations of cost as retirements are made; give individual consideration to the annual depreciation. Composite rates of depreciation on classes or groups of assets must not be used. The property record, if set up in detail, permits individual control of units of property, so that consideration can be given to the remaining life from time to time as conditions warrant individual treatment that may not apply to a group as a whole.

Such a record, capable of periodical check, makes the management realize the actual and relative cash invested in capital assets, their probable useful life and that if depreciation is not properly provided, the continuity of operations and profits may be jeopardized unless fresh capital can then be obtained.

In setting up the property record, the following important major steps are involved:

1. The determination, distribution or allocation of costs to individual items of property.
2. The determination of depreciation allowable and its comparison with that taken on the accounts or allowed for tax purposes.
3. Distribution or allocation of book or tax reserves where they are in excess of allowable depreciation.
4. Estimating of remaining expectancy of useful life of the assets.
5. Provision for recovering the undepreciated cost of the property over such remaining useful life.

Whereas each case must be considered on its own merits and conditions, there are some general principles that can be applied to these respective steps.

An inventory of the property is basic in meeting the requirements of T. D. 4422, as book records cannot be presumptive evidence as to the existence of the property unless inventory is taken. Based on the inventory, costs would be determined for the various units or groups of assets. Usually it is practical to ascertain from the records the cost of major units of property such as buildings, major machines, etc., which in total usually constitute an important part of the total book costs.

The remaining costs, not readily or economically possible of identification in detail can usually be allocated or distributed to the remaining property by group classes or items by allocation on the basis of estimated normal costs at date of acquisition or on appraisals where available. So long as actual costs in total are merely distributed on the basis of estimated costs of replacement no great distortion of the property accounts will result. Our past experience with the Treasury Department indicates they approve of reasonable allocation or grouping as above. By this method the property accounts are adjusted to reflect the cost of the assets in existence which they are presumed to reflect, and the total amounts allocated to units of property.

The inventory usually will show the non-existence of many assets, the cost of which are still recorded on the accounts. Where average rates have been used, I feel the proper adjustments should be made to take

such costs out of both the Gross Book Costs and a like amount out of the depreciation reserve accounts, so that the costs and reserves may be distributed to the actual property in existence and useful in future operations. Property discarded and not useful in future operations should also be eliminated from the accounts or fully reserved except for any salvage or sale value.

Determination of Depreciation Allowable

The determination of the depreciation allowable must be based on evidence from the property itself. By depreciation allowable, I assume is meant the amount of depreciation that should have been accrued over past years, so that the reserve accrued would be consistent with the actual condition of the property including physical deterioration, age factors, known obsolescence and other facts including future utility and remaining useful life. The allowable depreciation can rarely in my judgment be measured by age and a rate alone. Maintenance, use, repairs, replacement of parts, and similar factors tend over a period of years to distort age-rate computations.

The important consideration in determining depreciation allowable is the property itself and comparison with new property of like kind or to serve like utility. Per cent. condition is determined from the property evidence itself, and when such per cent. condition is computed on actual or allocated costs, then the depreciation allowable can be compared with that taken and/or allowed for tax purposes.

If the depreciation thus computed as allowable is more than that taken and/or allowed, then the depreciation provision over past years has been inadequate and adjustment of surplus should be made, but except for open tax years cannot be utilized for tax purposes.

If the depreciation allowable is less than that taken and/or allowed, then the past provision has been excessive and you may expect your future depreciation deductions for tax purposes to be decreased in future years in recovering the undepreciated balance over the remaining useful life.

In computing allowable depreciation there may be a question as to any alleged under-depreciation in any past closed years. My understanding is that in general the Department takes the position that any indicated under-depreciation for any past year should be added to existing reserves. I question, if the total reserve as of the end of the last closed tax year is shown to be adequate from the property, that any portion of the undepreciated balance of cost can be added to existing reserves and future allowances reduced by such computed excess depreciation attributed to the past.

In loss years there is also a question where it is clear that excessive amounts were deducted as to whether such excess may be restored to the balance to be recovered. Where the loss years are not closed by the running of the statutes of limitation, there can be no question as to the right of the taxpayer to file amended returns and I think he should do so to prevent the Government from employing excessive depreciation, taken on a return for loss years to reduce the value to be recovered through subsequent depreciation deductions.

Several tax advisers express the opinion that for any loss years without intervening closed profit years, that revision of excess depreciation charges is also advisable, and in their opinion permissible. For instance, if 1931 was a loss year with 1932 and 1933 still open, any excess depreciation for 1931 should be restored to the value to be recovered in later years. I am not expressing an opinion. I am not a tax adviser. That is your responsibility, or your attorney's.

In computing allowable depreciation, if production has been low during various years, it may be proper to reflect an extension in the useful life of some of the assets due to abnormal operating conditions. Here again the facts must govern. Sometimes depreciation will be retarded and life extended. In other cases, the reverse may be true due to lack of maintenance and repairs.

The allocation or distribution of excess depreciation taken and/or allowed is an important question to which management has given relatively little consideration. The easiest method and one that is most generally used is as follows:

Having determined or allocated costs, the average rate of depreciation used in the past for the account is specifically applied to the individual items on expired life. For instance, if a ten per cent. rate of depreciation has been used, ten per cent. per year is applied to each item in the property account. If the item has been in use ten years or longer, one hundred per cent. is accrued. If nine years, ninety per cent., etc. Where an average rate of depreciation is being used for an account, I take no exception to this procedure, but when the account is allocated to individual units of property, such computation is wrong and not to the best interest of the taxpayer for tax purposes, and more particularly for good cost or accounting purposes.

Any excess reserve which has been created through application of average rates should be equitably prorated or distributed to all of the assets so that each asset may receive its proper proportion of the excess depreciation taken or allowed. The computation and inspection of the property to determine the allowable depreciation furnishes the basis for allocation of the excess. In doing this, all of the useful property is retained in the depreciation base and the undepreciated cost is recovered over the future useful life of all of the assets.

This procedure tends to less distortion of departmental costs where departmental records are maintained, as the undepreciated balance for the entire account is distributed to all of the useful property.

The estimated remaining life should consider carefully possible future obsolescence and utility of the various

assets. The exact remaining life is not possible of predetermination. Experience and reasonable care will provide reasonable accuracy if corrected, as future experience and knowledge and changing facts dictate.

The provision to recover the undepreciated balance is a mathematical computation after costs, reserves and remaining useful life have been determined. The rate per year depends on the depreciation allowable or provided in the past. If a normal life is twenty years and the remaining life ten, the rate, if the provision in the past has been correct, will be 5%. If you have accrued in the past years 80% of the cost, then you have 20% to recover in the future 10 years or an annual rate of 2% on cost.

A detailed property record is not any requirement of the Internal Revenue Department, as they are entirely willing to have average or rate groups used. But only by this method can any real control of future property accounts be maintained. Such a system permits periodical verification of existence and condition of the assets. It permits change of depreciation as and when changing conditions indicate the remaining life is extended or shortened. It permits adjustments to the accounts if and when property is retired without raising the question whether the retirement is a normal one or due to unforeseen economic changes. It furnishes control for the dollars invested in plant assets.

Such a property record can be designed and operated so that the cost of maintenance is not excessive, in fact it can be handled with little or no more accounting work than most records that fail to control the assets. You must get your basic record which does involve expense of preparation, and the Treasury Department are your allies in getting something you ought to have.

In setting up such a record I recommend that all of the basic data requested by the Treasury Department on their various forms be recorded on the detailed property record. This includes such information as:

Date of acquisition
Cost
Depreciation allowed or allowable
Balance of cost to be recovered
Remaining useful life
Annual amount to recover the balance over the remaining estimated life.

In preparing this record make an extra carbon copy of the detailed sheets so that if requested, a complete copy could be furnished to the Treasury Department in support of the depreciation claimed.

The detailed sheets would, of course, be controlled by a property ledger control sheet and in many cases a copy of such control sheet might be all that would be required by one Treasury Department for each account, and of course, an extra carbon of the control sheets should be available to turn over to the revenue agent or to Washington on request. This, of course, gives more detail than is suggested by the various forms. It, however, gives all the information requested and will support in detail the claim made.

Industry's Bookshelf

Edison, by William Simonds; 364 pages. Bobbs-Merrill. $3.50.

A rather glamorous, highly interesting account of the Wizard of Menlo Park, with much new material about the Edison family background.

Introduction to World Economics, by Kemper Simpson; 295 pages. Harper Bros. $3.50.

Develops the thesis of internationalism by an extensive—not intensive—study of the trade and production of the United States, Germany, and France. The author displays an exceptional appreciation of the importance of chemicals in modern industry, though he fails to carry the logic of his chemical conclusions to their ultimate end, and his argument is often marred by misstatements of facts, as notably, on page 33, France is credited with being the second largest producer of sulfuric acid, manufacturing one-sixth of the world's supply, while as a matter of fact she ranks fifth behind the United States, Germany, England and Japan, and produces 650,000 of the world's 8,500,000 tons.

Industrial Marketing, by John H. Frederick, 401 pages. Prentice-Hall. $3.50.

A complete and lucid manual of industrial selling, from how to analyze the market all the way to why trade associations, covering the subject practically and from the business point of view.

Program for Unemployment Insurance and Relief, by H. H. Hansen, M. G. Murray, Russell A. Stevenson, B. M. Stewart, 201 pages. University of Minnesota Press. $3.00.

With the reasonable certainty that Congress is going to tackle this problem, this book very well deserves a careful reading by every business executive, for it discusses in detail, with a wealth of material from previous European experience with insurances of these types, many of the questions which are bound to arise in very practical form within the next year.

Executive Ability, by Glenn U. Cleeron and C. W. Mason. 183 pages. Antioch Press, $2.00.

A book written first for teachers, but extremely interesting for any executive interested to discover and develop ability in his subordinates. Easy to read and will handsomely repay a careful reading.

Patents, Trade-Marks, Copyrights—Law and Practice, by Oscar A. Geier, 128 pages. Richards & Geier, Patent and Trade Mark Attorneys, 274 Madison ave., N. Y. City. 7th Edition.

This book is written in terms the business man can understand, and covers the essential features of our patent, trade-mark, and copyright laws. The patent-law section of the book explains who may obtain a patent, what may be patented, the importance of specifications and claims, patent interference, reissues, appeals, infringement suits, etc. The trade-mark end of the book covers trade-marks in general, valid trade-marks, invalid trade-marks, unfair competition, state registration, interference, oppositions, appeals, infringements, etc. In addition to the facts about American patents and trade-marks, this book also gives a large amount of information about the foreign patents and trade-marks which will be of particular interest to manufacturers who export. Interested parties may secure a free copy of this book upon application to the publishers.

Industrial Standardization, Its Principles and Application, by John Gaillard, 123 pages. The H. W. Wilson Co., N. Y. City. $2.

A book that all executives can read with the certainty that they will derive much clarification of thought thereby on the whole subject of management and its relation to production.

Monsanto

Chloranilines
Chlorine
Chlorphenols
Cresylic Acid
Maleic Anhydride
Muriatic Acid
Nitric Acid
Orthodichlorbenzene
Phenol
Phthalic Anhydride
Plasticizers
Resins
Salicylic Acid
Sodium Sulfite
Solvents
Sulfuric Acid
Tricresyl Phosphate
Triphenyl Phosphate

A complete list is available on request

Chemicals

CHEMICALS OF QUALITY Monsanto ST. LOUIS, U.S.A.

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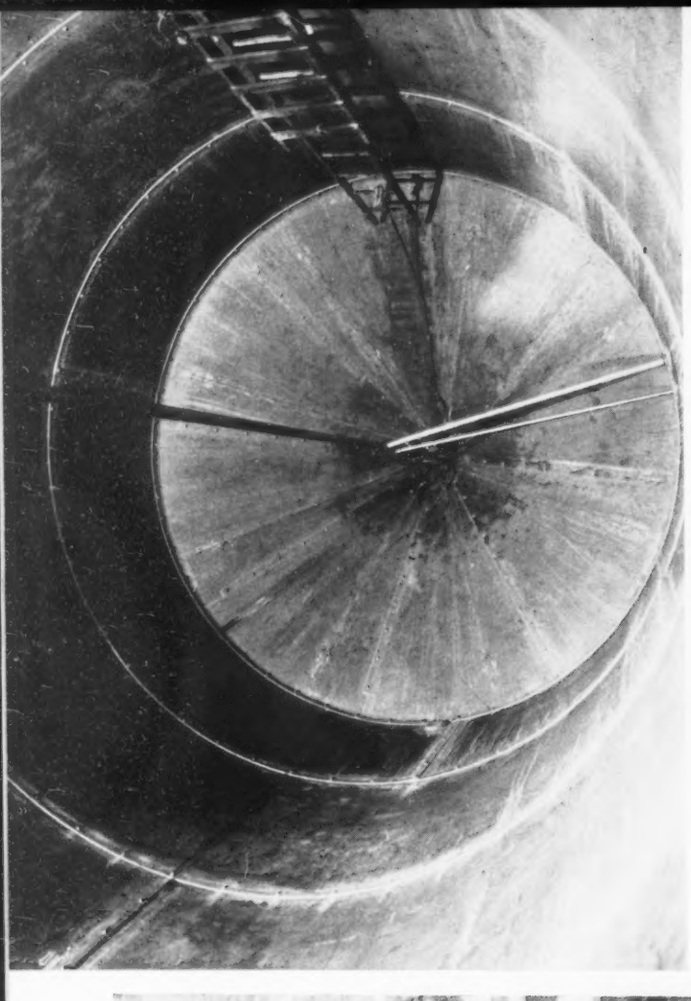
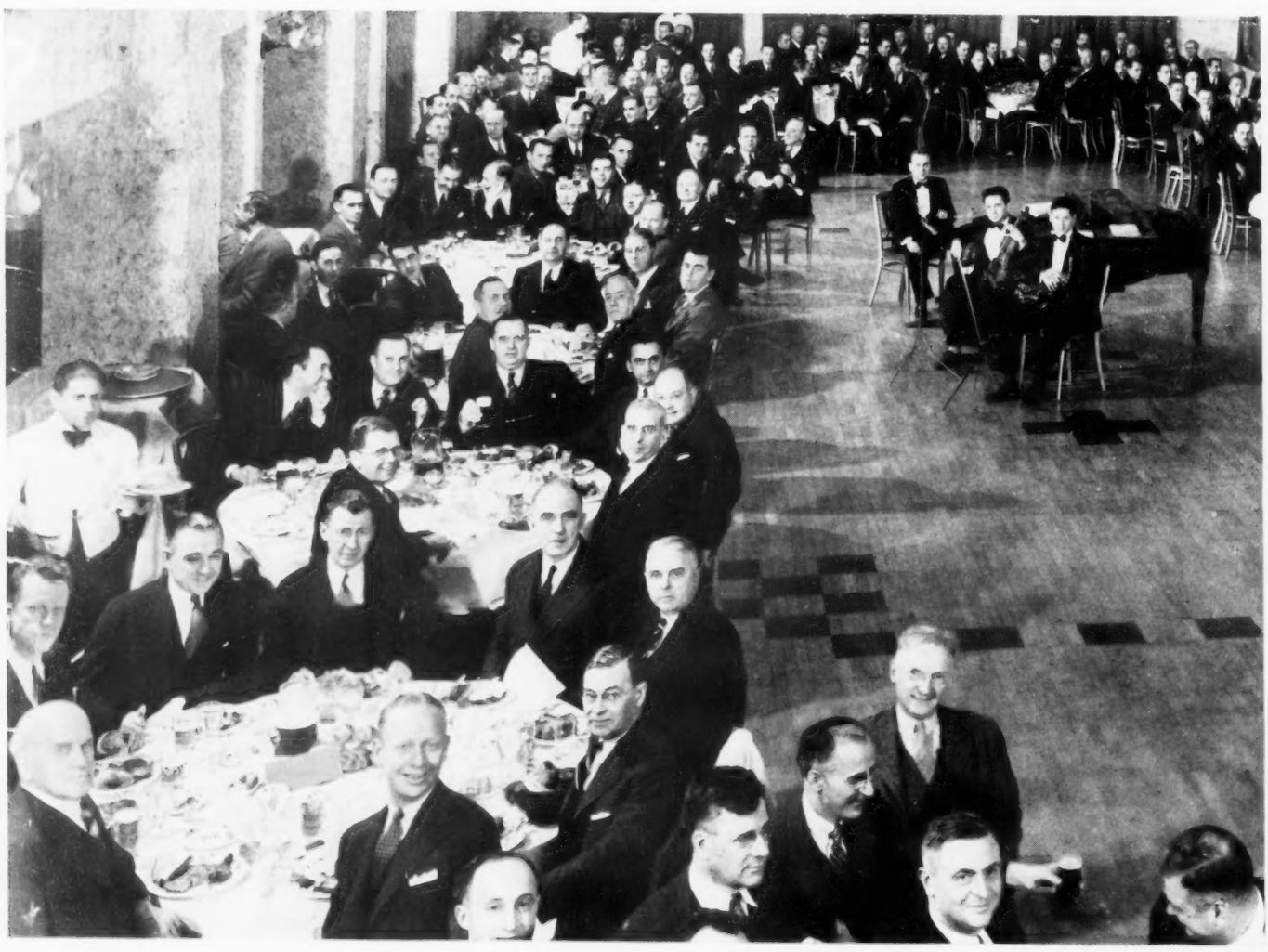
Everett Station BOSTON
500 No. Dearborn CHICAGO
383 Brannan St. SAN FRANCISCO
378 St. Paul St., West MONTREAL
Victoria Station House Victoria St. LONDON



CHEMICAL

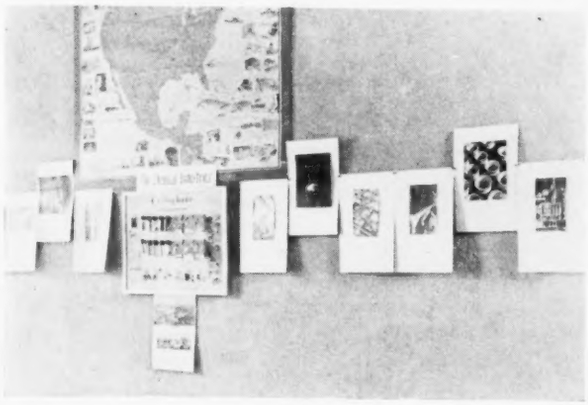
The Photographic Record

Above, new $500,000 dock of Dow Chemical at Bay City, Mich., eighteen miles east of Midland, on the Saginaw River, opened last September. Dock location and depth of river are sufficient to handle ocean-going shipments. Left, one of the largest soap boiling kettles, constructed entirely from Nickel-Clad Steel, by the Southwest Welding & Mfg. Co. Kettle, composed of four courses between its butterfly cover and conical bottom, is 15 feet in diameter.

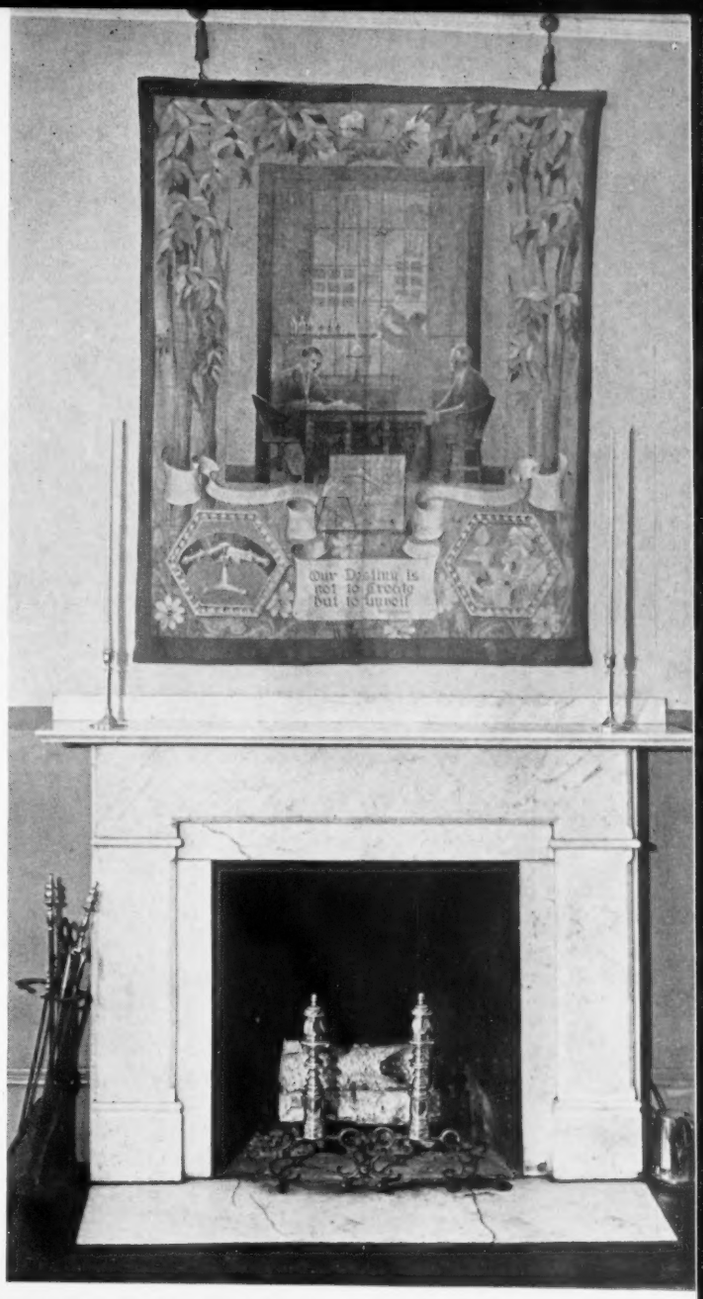


NEWS REEL

of Our Chemical Activities



Left, far-off Hawaii sends this photograph of a section of the chemical exhibit recently held at the University of Hawaii. Exhibition included photographs of various chemical processes and plants, samples of raw and finished products, and maps showing location of important industries.



Upper right hand corner, tapestry, depicting an allegorical representation of the professional activities of a consulting chemical engineer, hung in the office of Dr. Gustavus J. Esselen, in Boston. Typical of Dr. Esselen's interest in the chemistry of cellulose are the trees on the side and the cotton plant blossom and the cotton boll in the center at the top. O. R. Freeman, the artist, conceived the idea of painting the allegory on the tapestry; the main portion representing a business man in the office of a consulting engineer, discussing technical problems.

Below and opposite page, the big annual Christmas party of the Chemical Salesmen's Association, which attracted over 275 guests. For the third time in succession, the gala event was held at the Park Central Hotel.

THE CALCO CHEMICAL CO., INC.

BOUND BROOK, NEW JERSEY . *Dyestuffs—Intermediates—Chemicals*

35 Hartford St., Boston . 90 West St., New York . 2 South St., Philadelphia . 1112 South Boulevard, Charlotte, N. C.

A DIVISION OF AMERICAN CYANAMID COMPANY

Chemical Consumption

A digest of new products and processes in process industries for the user of chemicals.

Acid-Resisting Cements

By W. W. Dueckert

The strength of sulfur as a bonding agent can be increased by the admixture of coal, sand, pumice, and other materials. Peculiar characteristics can be imparted to it by the addition of bitumens, metallic sulfides, and fibrous materials. In some instances, iron filings and ammonium chloride have been added to sulfur, particularly for use in joining iron pipes. These latter cements owe their strength not only to the action of the sulfur itself, but also to the formation of iron sulfide in situ.

While certain of these products had been known for years, it was not until the work of Bacon and Davis ("Trans. Inst. Amer. Chem. Eng.," 1920-21) was reported, that attention was directed to the fact that sulfur cements can be used in the chemical industry because of their acid-resistant properties. These authors showed that cements of excellent strength could be made by mixing 40% by weight of sulfur with 60% sand. Since that paper, these cements have changed, and more attention has been given to the type and grading of the aggregate used in their production. The manufacture and sale of these cements have been undertaken by several companies that have developed excellent products. These commercial cements contain approximately 54% of sulfur by weight. The type of aggregate used in their fabrication varies; it may consist of sand, crushed porcelain, or shale. The tensile strength of such cements may vary from 480 lb./sq. in. to 648 lb./sq. in., their modulus of rupture from 1,558 lb./sq. in. to 2,050 lb./sq. in., and their coefficient of expansion from 31×10^{-6} to 48×10^{-6}.

Cements prepared by incorporating sand in molten sulfur deserve to be better known to chemical engineers, because they are highly resistant to sulfuric acid, possess desirable physical properties, especially strength, and are easy to prepare.

Sulfur in the form of figure-eight briquettes, such as are commonly used in cement testing, has a tensile strength of approximately 180 lb./sq. in. Sulfur in the form of a thin film, when used to bond together smooth aluminum blocks, has an adhesion strength of 900 lb./sq. in. These data and also the researches in Portland cements lead one to anticipate that the grading and the type of aggregate used in making sulfur cements are of importance in determining their strength and workability. In practice, the close packing of the aggregate can be accomplished in two ways—namely, by intermittent grading and by continuous grading. Intermittent grading involves the use of two or more sized aggregates, usually a coarse and a fine, to produce a product of minimum voids. The second involves the use of aggregates of successively decreasing sizes, and mixing these to obtain a product of minimum voids. Both of these methods were used to prepare sand mixtures of different voids. To these sand mixtures were added various quantities of sulfur, and the tensile strength of the cements so prepared was then determined.

The data obtained show that the strength of sulfur cements is related to their sulfur content and to the percentage of voids in the sand used in their fabrication. Regardless of the grading of the sand, cements of greatest tensile strength are obtained by mixing 40% of sulfur with 60% of sand. With a given quantity of sulfur the strength of the cements increases as the voids in the sand decrease. The strongest cement is obtained with a sand containing 32.5% voids.

When ungraded sands containing 40.8% voids are used, it was found that the strongest cements could be made with the sand of smallest particle size. A number of ungraded sands were mixed with 39% sulfur. The cement made with coarse sand, the majority of which passed through an 8-mesh sieve, but was retained on a 28-mesh sieve, had a tensile strength of 220 lb./sq. in. The cement made with medium sand, most of which passed through a 28-mesh sieve but was retained on a 65-mesh sieve, possessed a tensile strength of 315 lb./sq. in. The cement made with fine sand, 60% of which passed through a 200-mesh sieve, had a tensile strength of 510 lb./sq. in.

Cements of maximum tensile strength can be made by mixing 40% by weight of sulfur with 60% of sand, but such cements are not always suitable for commercial work. Generally they are stiff and pasty, and are poured with difficulty. For practical reasons it has therefore been found necessary to use more than 40% of sulfur in cement.

One of the materials that has a marked influence on the workability of sulfur cements is carbon black. The addition of 2% of this material to any sulfur cement retards settling of aggregate, and at the same time improves its working characteristics. Furthermore, the strength of the cement is increased by such additions. This increase in strength is more apparent with cements containing a large proportion of sulfur. According to the experiments we have carried out, the tensile strength of a cement containing 70% of sulfur can be increased from 405 lb./sq. in. to 670 lb./sq. in. by replacing 5% of the sand with carbon black. This cement has excellent working qualities, and shows little tendency to settle.

From paper presented to the meeting of the American Institute of Chemical Engineers at Pittsburgh.

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One objection cited against sulfur cements is that they have been known to fail under very peculiar circumstances. Pipes have been joined with them, and in time it was asserted that the joint had failed and that the cement had become granular and crumbly. These failures in certain instances may be attributed to the changes in the crystalline structure of sulfur. It has been found that all the commercial sulfur cements tested grew when subjected to fluctuating temperatures. Their growth seems to be related to their age. Those tested one day after being cast were found to have increased in length from 0.015 to 0.25%. Those tested ten days after being cast were found to have increased in length 0.08% to 0.44%. Furthermore, it was noticed that the bars of cement that had an original modulus of rupture of approximately 1,500 lb./sq. in. had become so weak, after being subjected to fluctuating temperatures, that they could be broken by hand.

In the search for some substance that would modify the crystalline habits of sulfur, it was discovered that various sulfides could be dissolved in sulfur, and that with their aid the characteristics of sulfur could be altered. With sulfides such as those of phosphorus or arsenic, we have found that it is possible to produce plastic masses resembling enamel. With the aid of organic sulfides, it is possible to produce masses of varying plasticity. Of these modifying agents, "Thiokol," an olefine polysulfide, is well adapted for use in sulfur cements. This material is soluble in sulfur, and with its aid it is possible to produce cements of varying plasticity that are resistant to thermal shock.

As sulfur is comparatively inert to many chemical agents, its use is suggested in structures subjected to corrosive liquids and fumes. The application of sulfur cements to such purposes is conditioned by the inertness of the aggregate mixed with the sulfur. Sulfur cements of proper type are resistant to sulfuric acid, and are not attacked by hydrochloric acid except in the presence of large quantities of iron. Evidence has also been obtained that they are resistant to 40% nitric acid. Although such cements are resistant to the mineral acids and their salts, they are attacked by concentrated solutions of alkaline hydroxides. They are also attacked by oils, particularly vegetable oils.

Their use is suggested in the construction of acid-proof floors and walls, pickling tanks, and in the installation of sewers and drains. They can also be used in the construction of ventilation shafts, chimneys, and flues, and in protecting brickwork from acid vapors and acid condensates, provided the temperatures encountered are below 94° C. They can be employed in cementing bell and spigot pipe joints.

Textiles

General Dyestuff recent releases include: Dullit W, a new compound for delustering rayons by the one bath method. The delustering effects will stand a mild soap washing and will not dust, as the delustering is formed during the working process inside the fibre. Product is said to be suitable for print effects. Supranol Brilliant Blue G, dyed from a Glauber's salt-acetic acid bath, produces bright blue shades of good fastness to light, and is particularly suited for dyeing knitting yarn. In fastness to fulling it meets the requirements of light and medium milling; has also the property of good fastness to acid fulling, as used in hat manufacturing. Shade is only slightly dulled by chrome, and may be used for brightening chrome colors. Immedial Violet BB, a new sulfur dyestuff, producing violet shades. May be used for vulcanizing purposes, and because of its good solubility can be used for machine dyeing. Diazo Indigo Blue 4GLA Extra, which when dyed in the usual manner and diazotized and developed with beta naphthol produces bright greenish shades of good fastness to light and washing. Fastness to alkali, ironing and rubbing is excellent. Dyeings give a clear white discharge with Rongalite C.

Patents—Textiles

Process for printing on textiles; printing paste composed of an anthraquinone vat color paste containing glycerine as printing assistant. No. 1,979,248. Oakley M. Bishop, Wilmington, Del., and Frank Willard Johnson, Pennsgrove, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method producing improved cellulosic spinning solution; adding oil to solution, then a pigment, which has previously been suspended in an alkaline reagent consisting of water and alkali. No. 1,979,268. Johan D. W. Hubbeling, Enka, N. C., to American Enka Corp., Enka, N. C.

Process dyeing cellulose esters or ethers. No. 1,979,505. Sidney Thornley, Grangemouth, Scotland, and Alfred Yeoman Twemlow, Moston, Manchester, England, to Imperial Chemical Industries, Ltd., London, England.

Process treating textiles containing organic derivatives of cellulose; by treating at least part of the derivative with a solution in a volatile organic liquid of an inorganic salt. No. 1,980,191. Wm. Alex. Dickie and Frank Brentnall Hill, Spondon, near Derby, England, to Celanese Corp. of America, Delaware.

Process for reducing lustre of cellulose acetate textiles; by applying colloid solution of aluminum oxide. No. 1,980,428. Reginald Henry Parkinson, Spondon near Derby, England, to Celanese Corp. of America, Delaware.

Method mercerizing cotton goods under recuperation of the caustic soda contained in the waste water. No. 1,980,498. Alfred Nitsche, Chemnitz, Germany.

Production wetting agents; treating naphthalene with a halide of the aryl and alkyl compounds class, in the presence of catalytic amounts of aluminum chloride, sulfonating resulting product. No. 1,980,543. Eli Lurie, New York, N. Y.

Production non-creasable textiles; by treatment with a sizing containing latex and a vulcanizing agent in solution. No. 1,980,676. John T. Gibbons, Wilmington, Del., to Jos. Bancroft & Sons Co., Rockford, Wilmington, Del.

Process printing on textiles containing both cellulose esters and cellulose; using paste of a direct azo dye and an alkali in the presence of a non-dyeing water-soluble aromatic nitro compound. No. 1,981,027. Herbert Bradley Briggs, South Reddish, and Richard Walter Hardacre, Cheetham Hill, England, to Imperial Chemical Industries, Ltd., London, England.

Preparation composition for softening textiles; using mixture of a water-insoluble fatty acid amido compound. No. 1,981,108. Georg Kalischer, Frankfort-am-Main, Josef Nusslein, Ludwigshafen-am-Rhine, and Rudolf Muller, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., New York, N. Y.

Method manufacture waterproof textiles, papers, etc., using concentrated glue solution as coating; ingredients of solution being glue and a glue hardening agent. No. 1,981,405. Hans Wrede, Berlin-Dahlem, Germany, to Paterson Parchment Paper Co., Passaic, N. J.

Preparation spinning solution for manufacture of soft lustre products; being a viscose solution and an aliphatic ester of a mono-thiocarbonic acid uniformly dispersed therein. No. 1,981,643. Rudolph S. Bley, Elizabethton, Tenn., to North American Rayon Corp., New York, N. Y.

Production wetting, dispersing, and emulsifying agents; the sulphated product of the condensation reaction of the fatty acids containing a good quantity of the C_{12} and C_{14} acids with monoethanolamine. No. 1,981,792. John W. Orelup, Summit, N. J.

Process for discharge printing; composition of gum, sodium-formaldehyde-sulfoxylate, diethylene glycol and zinc thiocyanate. No. 1,981,907. Frederick Baxter Downing, Carneys Point, N. J., and Richard Gesse Clarkson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Patents—Dyes

Process for water-soluble diazoimino compounds, suitable for use in production of ice colors; reacting a diazotized amine with a secondary amine. No. 1,979,327. Fletcher Beach Holmes and Miles Augustinus Dahlen, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation water-insoluble azo dyestuffs. No. 1,979,600. Fritz Ballauf and Albert Schmelzer, Cologne-Mulheim, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation dyestuffs of the diazine series. No. 1,979,667. Wolfram Vogt and Eugen Huber, Leverkusen-I. G.-Werk, Germany, to General Aniline Works, Inc., New York, N. Y.

Process manufacture chromiferous azo-dyestuffs. No. 1,979,913. Fritz Straub, Basel, and Hermann Schneider, Riehen, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Process preparing anthraquinone dyestuffs. No. 1,980,025. Arthur Wolfram, Frankfort-am-Main-Rodelheim, and Emil Hausdorfer, Hofheim-am-Taunus, Germany, to General Aniline Works, Inc., New York, N. Y.

Low temperature method of coloring granules; using soluble silicate and a metallic oxide reactant. No. 19,372. Reissue. Samuel F. Walton, Hamburg, N. Y., to Patent & Licensing Corp., Boston, Mass.

Mordant dyeing textiles containing an organic substitution derivative of cellulose; by applying a metallic oxide mordant to textile directly from a colloidal solution of said metallic oxide. No. 1,980,429. Reginald Henry Parkinson, Spondon near Derby, England, to Celanese Corp. of America, Delaware.

Process production wool azo dyestuffs; forming, when dry, red or violet powders; soluble in hot water, yielding on wool red shades of good levelling power and good fastness to light. No. 1,980,515. Erich Fischer, Bad Soden-am-Taunus, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation azo dyes; dyeing on leather yellow-brown to brown tints, having good fastness to action of alkalies. No. 1,980,539. Werner Lange, Dessau-Ziebigk in Anhalt, and Ulrich Dreyer, Wolfen, Kreis Bitterfeld, Germany, to General Aniline Works, Inc., New York, N. Y.

Production sulfur dyes; by heating meta-toluylene-diamine sulfur, a dibasic carboxylic acid, and an amine of the diphenyl series. No. 1,981,055. John T. Linster, Horace B. Pray and Herbert Lubs, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation dyestuff mixtures. No. 1,981,242. Joachim Mueller, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Production compounds of carbazole series; being valuable intermediates in the manufacture of dyestuffs. No. 1,981,301. Alfred Bergdolt, Cologne-am-Rhine, and Albert Schmelzer, Cologne-Mulheim, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation aluminum lakes of sulfonated compounds of the anthraquinone series; being valuable clear red pigment dyestuffs. No. 1,982,149. Fritz Baumann, Leverkusen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

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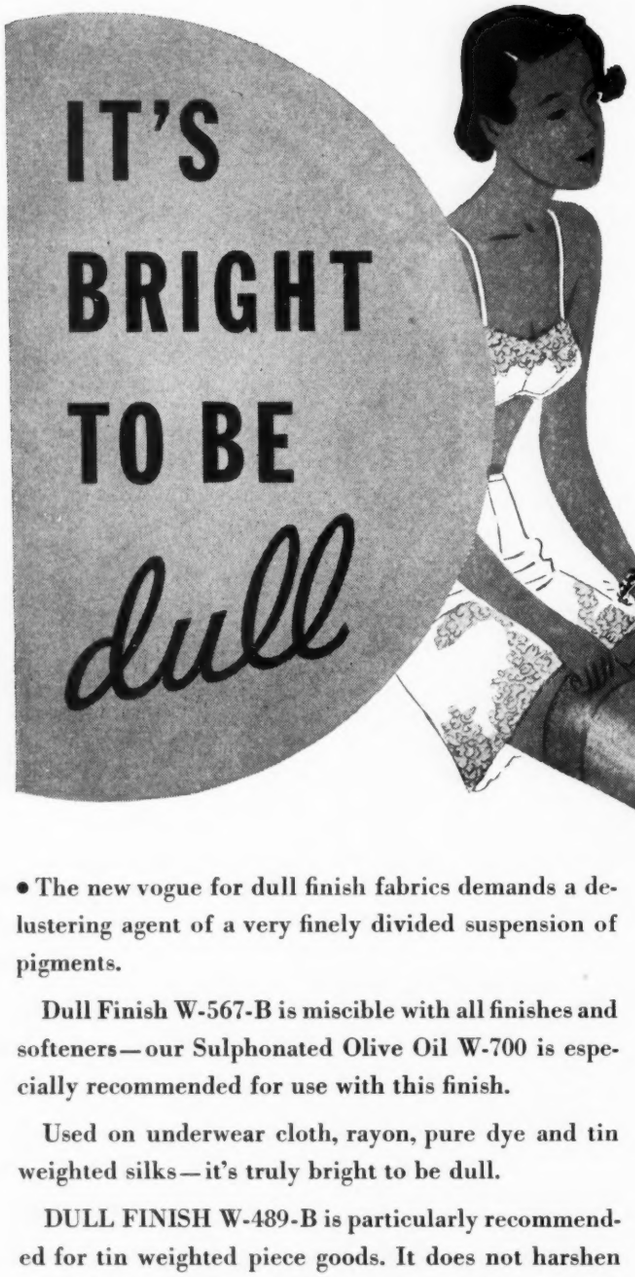

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Process for production azo dyestuffs of the stilbene series; reacting condensation products of dinitro-stilbene-disulfonic acid and amino-azo-compounds of the benzene series with alkaline reducing agents. No. 1,982,159. Alfred Gressly, Frankfort-am-Main, Fechenheim, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation chlorbromnitrodibenzanthrone, forming a blue powder, dissolving in concentrated sulfuric acid, giving red violet solution, and dyeing cotton fast navy blue shades from a blue vat. No. 1,982,312. Max Albert Kunz, Mannheim, Karl Koeberle and Erich Berthold, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation chlorinated isodibenzanthrones, which contain between 3 and 6 atoms of chlorine per molecule, two of which are in the 6 and 6' positions; dyeing vegetable fibre violet shades which do not become more reddish when spotted with water. No. 1,982,313. Max Albert Kunz, Mannheim, Karl Koeberle and Erich Berthold, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation azo dyestuffs, being in form of their alkali metal salts generally water soluble dark powders, dyeing cellulosic fibre green shades of good fastness properties. No. 1,982,332. Carl Taube, Leverkusen-Wiesdorf, Germany, to General Aniline Works, Inc., New York, N. Y.

Explosives and Pyrotechnics

U. S. Patent 1,975,099 gives following pyrotechnic composition for producing brown smoke: copper oxide 50 parts, lead peroxide 35 parts, and magnesium 15 parts.

Patents—Explosives

Manufacture explosive having liquid explosive ingredient; absorbent being hemp hurds, treated to reduce density thereof. No. 1,979,681. Albert Stanley Fox, New Castle, and Floyd Rape, Edenburg, Pa., to Burton Explosives, Inc., Cleveland, Ohio.

Patents—Pyrotechnics

Manufacture pyrotechnic, ignited by abrasion, and to burn slowly with intermittent detonations; using an oxidizing agent, compound of phosphorus, and an element of the phosphorus group. No. 1,980,910. Herbert Clauser, Elkton, Md.

Rubber

Reports from Germany tell of a new material "Krutex," which is a mixture of rubber and cork, possessing the advantages of both materials. Although the proportion of rubber, which is used as the binding medium, is quite high, panels of this material will not bulge out sideways when used as sub-layers or insulation. The specific weight is slightly smaller than that of rubber, and it is produced in boards of from 0.8 to 12.7 mms. thickness. They may be put together to any needed thickness.

Patents—Rubber

Process vulcanizing rubber and rubber compounds; vulcanizing agent being combination of a phosphorus sulfide, a base and free sulfur, with or without the addition of oil as a vehicle. No. 1,979,499. Allon Skipsey, St. Albans, England.

Method manufacturing an anti-oxidant; mixture of secondary aromatic amines. No. 1,980,102. Waldo L. Semon, Cuyahoga Falls, Ohio, to B. F. Goodrich Co., New York, N. Y.

Process preparing a hydrochloride addition product of rubber; reacting rubber with dry hydrogen chloride. No. 1,980,396. Erich Gebauer-Fuelnegg, Evanston, Ill., and Eugene W. Moffett, Gary, Ind., to Marsene Corp. of America, Gary, Ind.

Production rubber-latex concentrates, with a content of 70-85% of dry substance, by evaporation in the presence of protective colloids and free strong non-volatile alkali. No. 1,980,599. Paul Scholz, Frankfort-am-Main, Germany, to Revertex Ltd., London, England.

Manufacture porous or microporous articles of vulcanized rubber material from an aqueous dispersion thereof. No. 1,980,813. Evelyn William Madge, Stockland Green, Birmingham, England, to Dunlop Rubber Co., Ltd., Great Britain.

Manufacture finely divided compositions of rubber or similar material; using a mixed dispersion of an aqueous artificial dispersion of rubber and latex. No. 1,980,943. Philip Dobson Patterson, Moseley, England, to Dunlop Rubber Co., Ltd., Great Britain.

Method of plasticizing rubber; incorporating in solid rubber during breakdown period a small amount of lead dioxide and an organic acid anhydride. No. 1,981,168. Roscoe H. Gerke, Nutley, N. J., to Morgan & Wright, Detroit, Mich.

Method stabilizing latex; by treatment with sodium perborate and ammonia, rendering latex highly resistant to coagulating agencies. No. 1,981,184. John McGavack, Leonia, and Ralph F. Tefft, Nutley, N. J., to Naugatuck Chemical Co., Naugatuck, Conn.

Method for making and obtaining rubber in powdered form, from dispersions or solutions. No. 1,981,691. Adam Joan Adriaan Yssel de Schepper, The Hague, Netherlands.

Process for production coarse rubber; adding urea as a blowing agent to a raw rubber mixture. No. 1,981,722. Rudolf Ditmar, Graz, Steiermark, Austria, to Rudolf Heinrich Koppel, Aachen, Germany.

Improved process for devulcanization of rubber and similar substances; subjecting vulcanized rubber to action of hydrogen. No. 1,981,811. Anderson W. Ralston, Chicago, Ill., and James R. Wright, Baton Rouge, La., to Standard Oil Development Co., Bayways, N. J.

Preparation of a mixture adapted to be vulcanized by the heat and pressure method; of rubber, sulfur, zinc oxide, an organic accelerator of vulcanization, and a mixture of water-insoluble, petroleum-soluble, saturated mono-carboxylic acids, of petroleum origin. No. 1,981,822. Arthur W. Burwell, Niagara Falls, N. Y., to Alox Chemical Corp., New York, N. Y.

Process for manufacture of fibre and rubber combinations for molding, sheeting, tubing and like operations. No. 1,982,024. Reed P. Rose, Jackson Heights, and Allen F. Owen, Saratoga Springs, N. Y., to General Rubber Company, New York, N. Y.

Metals and Alloys

A waste product of annealing furnaces in iron smelting works, called iron hammer scale, has been tested as a substitute for red iron oxide in anti-rust paints. A. Schneider (*Chemiker Zeitung*, October 10) reports that trials in mixture with red lead have yielded satisfactory results.

Deoxidizing Non-Ferrous Metals

This method of the deoxidation of non-ferrous metals consists in adding zinc dust and red phosphorus held together by a binder. U. S. P. 1,967,810.

Non-Toxic Plating Baths

The use of thiourea complex salts in place of the poisonous cyanides is recommended by H. Gockel (*Chemiker Zeitung*, Sept. 26). For example, an excellent silver deposit results from a bath containing 25 to 30 gms. silver nitrate and 60 to 70 gms. thiourea per litre of water, forming the complex salt $Ag[CS(NH_2)_2]_3.NO_3$. Recommended working conditions, using a silver anode and a copper or brass cathode, are a temperature of 30 to 35° C., a bath tension of 1.5 volts, and a current density of 0.2 amperes per square decimetre. Copper plating is successfully carried out with the copper complex salt, $Cu[CS(NH_2)_2]_3.Cl$.

Patents—Metals, Alloys

Manufacture lead-sodium alloys; composition of sodium, lead, and magnesium. No. 1,979,254. Frederick Baxter Downing, Carneys Point, and Louis S. Bake, Pennsgrove, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method chloridizing an ore containing a high content of zinc sulfide. No. 1,979,279. Thos. Austin Mitchell, Denver, Colo., to Hughes-Mitchell Processes, Inc., Denver, Colo.

Method chloridizing an ore of high zinc content. No. 1,979,281. Thos. A. Mitchell, Denver, Colo., to Hughes-Mitchell Processes, Inc., Denver, Colo.

Method chloridizing an ore containing an ore metal oxide and an acid-soluble silicate. No. 1,979,287. Royal L. Sessions, Denver, Colo., to Hughes-Mitchell Processes, Inc., Denver, Colo.

Process treating lead contaminated with small amounts of alkaline earth metal reagents; adding caustic soda and nitre to a molten bath of such lead, forming a dross containing the residual alkaline earth metal reagents, and effecting a separation between the molten bath and dross. No. 1,979,442. Jesse O. Betterton and Yurii E. Lebedeff, Metuchen, N. J., to American Smelting & Refining Co., New York, N. Y.

Manufacture ternary alloy of magnesium, barium, and strontium; magnesium being at least 50% of the alloy. No. 1,979,452. Hugh S. Cooper, Cleveland, O., to Kemet Laboratories Co., Inc., New York.

Process making reenforced coverings; metal screen coated with metal sulfate; the coated screen coated with a bituminous cement. No. 1,979,684. Robt. H. Green, Los Angeles, Cal., two-thirds to Max E. Campbell, Los Angeles, Cal., and Fred E. Griffith, Long Beach, Cal.

Method preventing corrosion between unlike metals; joining metals and taping joint with solid tape of cellulose ester. No. 1,979,961. Christian Dantsizen, Schenectady, N. Y., to General Electric Co., Schenectady, N. Y.

Process electrolytically removing scale from ferrous metal surfaces, and simultaneously electrodepositing tin thereon. No. 1,979,996. Wm. M. Phillips, Birmingham, and Guy M. Cole, Detroit, Mich.

Method counteracting corroding influence of liquids upon magnesium and magnesium alloys, which are in contact, by adding to liquid enough alkali sulfide to prevent corrosion of the metal. No. 1,980,282. Josef Martin Michel, Bitterfeld, Germany, to Magnesium Development Corp., Delaware.

Process making a beryllium aluminum alloy. No. 1,980,378. Louis Burgess, New York, N. Y.

Method making ductile electrolytic iron from sulfide ores. No. 1,980,381. John R. Cain, Washington, D. C., one-half to Frederic A. Eustis, Milton, Mass.

Process producing resinous metal compounds; using a polyhydric alcohol. No. 1,980,441. Paul Lawrence Salzberg, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method purifying zinc metal; by distilling a plurality of baths of impure molten zinc in a series of separate retorts. No. 1,980,480. Philip M. Ginder, George T. Mahler, and Howard M. Cyr, Palmerton, Pa., to New Jersey Zinc Co., New York, N. Y.

Preparation coating for metals; includes an acid salt, an ionizing solvent, unburnt clay, and a salt of a metal less basic than iron, typified by copper nitrate. No. 1,980, 518. James H. Gravell, Elkins Park, Pa., to American Chemical Paint Co., Ambler, Pa.

Production case hardened alloy steels; having carburized surface of more than 1% carbon; surface being obtained by hardening in a molten salt bath containing an alkaline earth metal cyanide. No. 1,980,817. Ernest C. Moffett, Woodbridge, N. J., to American Cyanamid Co., New York, N. Y.

Method coating iron or steel sheets with a protective metallic coating. No. 1,980,961. William H. Sommer, Peoria, Ill., to National City Bank of Cleveland, Ohio, and John A. Chapman, Chicago, Ill., trustees.

Method removing cadmium from a zinc salt solution. No. 1,981,068. Oliver C. Ralston and Fay H. Miller, Clarkdale, Ariz., to United Verde Copper Co., Delaware.

Process treating metals; subjecting metal to a non-oxidizing acid solution containing an organic sulfoxide. No. 1,981,109. Albert Klamroth, Cologne-Mulheim, and Hans Ahrens, Leverkusen-Wiesdorf, Germany, to I. G., Frankfort-am-Main, Germany.

Process treating polyhalite and similar minerals. No. 1,981,125. Eugene P. Schoch, Austin, Texas.

Method making base metal castings provided with a hard surface coating; providing a mold with a coating made of finely powdered material of the molybdenum carbide or tungsten carbide group, and mixtures containing molybdenum or tungsten with carbon adapted to form a carbide thereof. No. 1,981,403. Jos. W. Weitzenkorn, Mt. Lebanon, Pa.

Process for electrodeposition of metals or alloys; using an ammoniacal anolyte, an insoluble anode, and a catholyte containing an ammoniacal solution of a metal to be electro-deposited. No. 1,981,715. Ralph Hall Atkinson, Acton, England, to International Nickel Co., Inc., New York, N. Y.

Process of hardening or tempering copper; using rosin. No. 1,981,718. John Vid Chicon, Ambridge, Pa.

Preparation composition for treatment aluminum or its alloys; being a flux containing a mixture of potassium chloride, sodium chloride, cryolite, and a boron compound. No. 1,981,798. Walter Bonsack, Cleveland, Ohio, to National Smelting Co., Cleveland, Ohio.

Production of an electrolyte for depositing rhodium; which includes a rhodium phosphate compound in a dilute sulfur acid solution. No. 1,981,820. Fritz Zimmermann, Newark, and Herbert E. Zschiegner, Woodbridge, N. J., to Baker & Co., Inc., Newark, N. J.

Production alloy steel of following composition: silicon, chromium, aluminum, molybdenum, titanium, carbon, and iron. No. 1,981,898. Alfred L. Boegehold and Arthur A. Peterson, Detroit, Mich., to General Motors Corp., Detroit, Mich.

Manufacture a plastic bronze bearing metal having 40 to 50% lead, 60 to 50% copper, and calcium, to the extent of less than 0.1%. No. 1,981,927. Alfred W. Schluchter, Dearborn, Mich., to General Motors Corp., Detroit, Mich.

Method plating iron with aluminum; by application of aluminum containing from .2 to .15% silicon. No. 1,982,563. Anton Wimmer, Dortmund, Germany.

Coatings

"Parabernol," a liquid substance, produced cheaply from waste and scrap amber, is creating interest abroad because of its notable characteristics of being adaptable for many purposes for which shellac is used. In the process, waste and scrap amber is ground into powder; after washing and purification the substance is converted into a syrupy mass by the introduction of certain chemicals, then dried and again reduced to powder, after which this dried mass is processed and easily converted into a thin liquid. *The Chemical Trade Journal.*

Patents—Coatings

Process manufacture varnishes and the like; distilling castor-oil acid in vacuo, finally heating residue of still liquid and soluble character with an aliphatic polyhydric alcohol. No. 1,979,495. Johannes Scheiber, Leipzig, Germany.

Preparation an oil varnish containing cellulose laurate dissolved in a major proportion of a drying oil. No. 1,979,645. Hermann Schladebach, Dessau in Anhalt, and Herbert Hahle, Dessau-Ziebigk in Anhalt, Germany, to I. G., Frankfort-am-Main, Germany.

Process making water-resistant varnish; reacting cresol, tung oil and formaldehyde together, dehydrating, adding chlorinated naphthalene, and finally adding toluene and xylol. No. 1,980,258. Myron E. Delaney, East Orange, N. J., to Bakelite Corp., New York, N. Y.

Manufacture modified products from natural resins. No. 1,980,367. Laszlo Auer, Budapest, Hungary, to J. Randolph Newman, Washington, D. C., as trustee.

Production polymeric alpha methyl methacrylate resin, characterized by thermoplasticity, toughness and hardness. No. 1,980,483. Rowland Hill, Blackley, England, to Imperial Chemical Industries, Ltd., London, England.

Production xylenol-formaldehyde-magnesium oxide resin, softening but not flowing on a hot plate at atmospheric pressure, but flowing freely and setting to a hard mass when subjected to hot pressing at about 165° C. No. 1,980,987. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., Montclair, N. J.

Process manufacture artificial leather; applying over a rubber coated fabric sheeting a varnish coating made of a drying oil, asphalt, a solvent for the asphalt, and an organic iron compound soluble in said solvent. No. 1,982,231. Arthur N. Parrett, Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation of a resin; treating an aromatic amine of the benzidine and diphenylamines group with an aldehyde of the lower fatty acid series and furfural group, in a solution of non-oxidizing mineral acid. No. 1,982,486. Paul F. Schlingman, Schenectady, N. Y., to General Electric Co., Schenectady, N. Y.

Plastics

Homogeneous cellulose acetate solutions containing a high proportion of water can be obtained by plasticizing cellulose acetate with phenol (or cresylic acid and the like). The uniform mass can then be dispersed in water with the aid of alkali caseinate (or other hydrophilic colloid). Apart from the molding possibilities of this aqueous mass, the particular colloidal nature of the dispersion permits ready incorporation of many materials normally incompatible with cellulose acetate, including latex, asphalt dispersions and water-soluble dyes. According to one example in *Synthetic and Applied Finishes*, 4,000 parts of 10% aqueous phenol solution are mixed at 50° C. with 500 parts of cellulose acetate. The phenol-plasticized mass is worked up in a standard type of mixer with soluble caseinate or gum tragacanth with gradual addition of water. During the latter operation a change of phase occurs at a certain point and the cellulose acetate is dispersed as minute particles in the aqueous medium.

Acrylic Acid Polymerization Products

Manufacture, on an extensive scale, of the polymerization products of acrylic acid has been started by Rohm & Haas, Darmstadt, Germany. The materials, described in *British Plastics & Moulded Products Trader*, are said to be very valuable as stabilizers for nitro-cellulose, elastic, resistant to light and to atmospheric influences. They are being used in the manufacture of safety glass in conjunction with nitrocellulose.

Imitation Marble

The production of imitation marble is carried out in French Patent 768,156, by the process of pouring into molds a paste comprising magnesia, calcium sulfate, powdered marble, coloring matter, and magnesium chloride solution, together with a little magnesium oleate or stearate. This mass sets hard in 24 to 26 hours, according to the temperature.

Paper and Pulp

Research carried out on Kymene A. B. chlorine proves that it is not as effective as chloramin (mixture of mono- and dichloramin) for the prevention of slime formation. Chloramin is added at several steps in the recovery system. The quantities needed are said to be less than one-thousandth of one per cent. chloramin per litre of backwater containing 0.16 g. dry substance, bringing the total cost to not more than 0.3 pence per kg. of paper. *Est. Zentralbl. f. d. Papierind.* 52, 54-55, 1934.

Sizing with Resin and Wax

It has been noted by plant chemists that for some requirements a mixture of wax with the resin gives a better sizing than resin alone. W. Seck (*Papierfabrikation*) has made tests to verify this opinion. Sheets were sized, one lot with 2% resin, another lot with 1½% resin and ½% wax, a third lot with 1% of each. The papers were then tested for their impermeability to water and finish, and it was shown that the impermeability was considerably increased. The mixture of 1% each of wax and resin, improved the face after calendering. It was established that the wax acts on the colloidal properties of the resin, and the mixture also possesses the advantage that the combined wax and resin melt at a lower temperature than resin alone. *Paper Making and Paper Selling*, November, 1934.

Patents—Pulp and Paper

Process treating wood to form chemical pulp; forming and disrupting chips into pulp, washing tannins and sugars from pulp, and digesting pulp to remove encrusting lignins; acidulating and bleaching. No. 1,979,341. Frederich Olsen, Alton, Ill., to Cellulose Research Corp., Delaware.

Process manufacture paper or board from raw shredded redwood bark; the step of conveying to the filter screen or plate the shredded bark, while suspended in a viscous liquid medium. No. 1,979,864. Francis L. Carson, San Francisco, Cal., to Pacific Lumber Co., San Francisco, Cal.

Manufacture coated paper; coating being mixture of mineral material, casein, rubber solids of an aqueous dispersion of rubber, and triethanolamine. No. 1,982,018. Allen F. Owen, Glenbrook, Conn., to Naugatuck Chemical Co., Naugatuck, Conn.

Miscellaneous

A drastic change in the design of radio power amplifiers has been worked out by Westinghouse engineers in the design of station KYW in Philadelphia. Radio condensers designed for broadcast transmitters formerly have been constructed of large circular or rectangular plates held in place by high voltage

insulators. The new condensers, although even greater in voltage and capacity rating, are contained in small cylindrical tanks into which nitrogen gas is added under high pressure.

Refining Crude Cotton Seed Oil

An improvement over old processes for refining crude cotton seed oil is described in U. S. P. 1,981,605. The mucilaginous matter is effectively removed and a lasting decolorization obtained by heating the oil together with a small percentage of anhydrous solid glyceryl or glycol borate.

Tobacco Treatment

Treatment of tobacco, comprising adding to tobacco, an alkaline hydrated aluminum silicate which upon the smoking of the tobacco will be capable of adsorbing and/or absorbing gases and tarry compounds produced by the burning mixture. U. S. P. 1,972,718.

Patents—Miscellaneous Glass

Process production safety glass; using a solvent and plastic material for adhesive. No. 1,980,510. Geo. B. Watkins, Toledo, Ohio, to Libbey-Owens-Ford Glass Co., Toledo, Ohio.

Leather Tanning

Process chrome tanning; hide, after having flesh and hair removed, being tanned into leather by pretanning in a mixture of aldehyde, acid, and salt. No. 1,982,586. Frederick A. Vogel, Milton Ernest, England, Jessie M. Vogel, executrix of the estate of said Frederick A. Vogel, deceased, to Edwin B. H. Tower, Jr., Milwaukee, Wis.

Chemical Specialties

Preparation equilibrated paint and varnish remover containing petroleum hydrocarbons. No. 1,980,043. Carleton Ellis, Montclair, N. J., to Chadeloid Chemical Co., New York, N. Y.

Preparation fused salt bath for cementing iron articles, using barium chloride, alkali metal cyanide, strontium halide and an alkaline compound of barium. No. 1,980,152. Walter Beck, Frankfort-am-Main, and Klaus Bonath, Cronberg-in-Taunus, Germany, to Deutsche Gold & Silber Scheideanstalt, vormals Roessler, Frankfort-am-Main, Germany.

Preparation brake lining, impregnated with fusible resinous material of cresylic acid and formaldehyde condensed together. No. 1,980,221. Wm. Nanfeldt, Clifton, N. J., to World Bestos Corp., Paterson, N. J.

Preparation disinfectant; composition consisting of a dispersion containing a dispersing agent, water chlorophenolic material, and hydrocarbon oil. No. 1,981,123. James N. Roche, Pittsburgh, Pa., to American Tar Products Co., Inc., Delaware.

Water Treatment

Preparation water softener, comprising a flake having thickness of the order of .001 inch of a compound of the alkali metal meta and pyrophosphates and mixtures thereof class. No. 1,979,926. Robt. E. Zinn, Chicago Heights, Ill., to Victor Chemical Works, Chicago, Ill.

Treatment sewage or industrial wastes, comprising filtering by continuous vacuum filters. No. 1,980,244. Arthur Wright, Montclair, N. J.

Process of treating waste sulfite liquor with solid phase caustic lime to produce a solid lignin-sulfonic acid compound. No. 1,981,176. Guy C. Howard, Wausau, Wis.

Cellulose

Apparatus for production of artificial threads from cuprammonium solution. No. 1,979,925. Arthur Zart and Franz Hoelkeskamp, Barmen-Rittershausen, Germany, to American Bemberg Corp., New York, N. Y.

Method producing artificial thread by the viscose process. No. 1,979,929. Thomas F. Banigan, Buffalo, N. Y., to Du Pont Rayon Co., New York, N. Y.

Method of coating; applying coating composition to a sheet or film of regenerated cellulose in the presence of formamide. No. 1,979,936. Otto Herrmann, Wiesbaden, Germany, to Du Pont Cellophane Co., New York, N. Y.

Preparation cellulosic composition; being cellulose acetate and a phenyl phenol. No. 1,979,986. Harry S. Mork, Brookline, Mass.

Process treatment nitrocellulose in a reaction mixture containing *in statu nascendi* hydrogen chloride and a fatty acid chloride. No. 1,980,306. Adolf Weihe and Kurt Thinius, Eilenburg in Sachsen, Germany, to Deutsche Celluloid-Fabrik, Eilenburg in Sachsen, Germany.

Apparatus for digesting cellulose material. No. 1,980,390. Camille Dreyfus, New York, N. Y., and Geo. Schneider, Montclair, N. J., to Celanese Corp. of America, Delaware.

Process preparation cellulose ethers; etherifying alkali cellulose with a halide etherifying agent in the presence of a low molecular weight, inert, water soluble ether of the polyethers or cyclic ethers class. No. 1,980,988. Deane C. Ellsworth, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation plastic composition for non-inflammable cellulosic film; 100 parts cellulose acetate, 20 parts triphenyl phosphate, and 10 parts diethyl phthalate. No. 1,981,132. James F. Walsh, South Orange, and Kirtland Flynn, East Orange, N. J., to Celluloid Corp., Newark, N. J.

Process for securing adhesion between cellulose derivatives and other materials; treating cellulose derivative with a mixture comprising a volatile non-solvent and a plasticizer. No. 1,981,152. James Henry Rooney, Spondon, near Derby, England, to Celanese Corp. of America, Delaware.

Manufacture wood cellulose comparable with cotton, with a high tenor of "alkali resisting cellulose"; treatment of cellulose to be refined in autoclave with liquor containing sodic hydrate and colloidal sodic salts. No. 1,981,323. Francesco Carlo Palazzo and Fortunato Palazzo, Florence, Italy.

Process making cellulose nitro-acetate; introducing cellulose into a solution of cellulose nitrate and chloracetic acid, and acetylating resulting cellulosic mixture. No. 1,981,396. Cyril J. Staud, Rochester, N. Y., and Charles E. Waring, Dayton, Ohio, to Eastman Kodak Co., Rochester, N. Y.

Preparation cellulose organic ester composition; of cellulose acetate and tetrahydrofurfuryl caproate as plasticizer. No. 1,981,398. Ernest R. Taylor and Henry B. Smith, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Method preparing separate relatively thin sheets of nitrated cellulose. No. 1,982,122. Samuel Alexander Pollock, London, England.

Preparation coating and impregnating compositions; using a cellulose ester, and more than 100 parts of a tartrate ester plasticizer per 100 parts of cellulose ester. No. 1,982,227. William Henry Moss, London, England, to Celanese Corp. of America, Delaware.

Agricultural

Preparation insecticidal composition, not harmful to foliage and trees, using an ortho-phenylphenol compound. No. 1,981,219. Edgar C. Britton and Lindley E. Mills, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Apparatus for producing phosphatic fertilizers. No. 1,982,479. Beverly Ober, William W. Pagon, Geo. L. Pruett, and Willard W. Troxell, Balto., Md., to Oberphos Co., Balto., Md.

Apparatus for producing phosphatic fertilizers; compounding dust and a liquid. No. 1,982,480. George C. Pfaff, Balto., Md., to Oberphos Co., Balto., Md.

Process for treating solutions of nitrate of lime having an addition of nitrate of ammonia and a 15.5 to 15% nitrogen content to prepare same for further treatment in accordance with the raindrop process for causing solution to solidify in globular form. No. 1,982,549. Nicolai Stephansen, Rjukan, Norway, and Carl Eyer, Ludwigshafen-am-Rhine, and Georg Meder, Munster-am-Taunus, Germany, to Norsk Hydro-Elektrisk Kvaelstof-Aktieselskab, Oslo, Norway.

Company Booklets

C308. Commercial Solvents Corp., Terre Haute, Ind. December issue of *Alcohol Talks* is devoted to "The Grass That Is Corn"—a discussion of the industrial products derived from corn as a raw material.

C309. Diamond Alkali Co., Pittsburgh, Pa. Latest 4-page circular stresses the high standard of Diamond alkalies.

C310. E. I. du Pont de Nemours & Co., Wilmington, Del. *The Du Pont Magazine* (holiday number) contains a very interesting feature article by Brooks Darlington indicating the chemical relationship of a host of important du Pont products.

C311. Eastman Kodak Co., Rochester, N. Y. *Synthetic Organic Chemicals* for December deals with "Co-Ordinate Valence in Organic Chemistry."

C312. Florasynth Laboratories, Inc., 1513 Olmstead ave., N. Y. City. The November-December price list is available.

C313. Givaudan-Delawanna, Inc., 80 5th ave., N. Y. City. The perfumer, chemical specialty manufacturer, and all those in whose products there is an odor problem will find this monthly paper a fund of information. This department will gladly see that you are placed on the regular mailing list by the Givaudan-Delawanna Company.

C314. The Grasselli Chemical Co., Cleveland, Ohio. A reprint "Cadmium Travels South With Byrd" (from the October *Du Pont Magazine*) is being mailed to all interested.

C315. D. W. Haering & Co., Chicago, Ill. *H-O-H News* is a bimonthly news report of the latest in boiler and feed water treatment problems, and every engineer dealing with power should receive this highly instructive booklet regularly.

C316. National Lime Association, Washington, D. C. "Water Supply And Treatment" (Bulletin 211) is a detailed treatise on the general subject of water supplies and the problems of purification and conditioning written by an expert, Charles P. Hoover of the Columbus, Ohio, water softening and purification works. Its 141 pages of text really constitute a very enlightening textbook and every engineer dealing with water supplies for power will find a copy extremely useful.

C317. The Mallinckrodt Chemical Works, St. Louis, Mo. The December price list shows several important price revisions.

C318. Merck & Co., Rahway, N. J. The December price list has been distributed, and copies are still available.

C319. Monsanto Chemical Co., St. Louis, Mo. *Monsanto Current Events* for November contains 2 interesting articles, one on leather and the other on the various uses of chlorine.

C320. Philadelphia Quartz Co., 121 S. 3rd st., Philadelphia, Pa. December issue of *P's & Q's* discusses use of silicate in the roofing granule industry. Index for the last 12 issues is included.

C321. Thompson-Hayward Chemical Co., Kansas City, Mo. Reading *The Test-Tube* is always a pleasure. Chemical consumers in the mid-west and south-west should receive this interesting, newsy, instructive house-organ regularly.

C322. R. T. Vanderbilt Co., 230 Park ave., N. Y. City. It is extremely difficult to point out items of particular interest in the November-December issue of *The Vanderbilt News* for each and every item is of special significance to the rubber technician. No chemist in the rubber field should fail to become a regular subscriber to this journal.

E323. Carbide and Carbon Chemicals Corp., 30 E. 42 st., N. Y. City. A thoroughly revised edition of a most useful booklet—"The Preparation of Emulsions and Other Products with Triethanolamine," 56 pages of authoritative information on the use of this most versatile chemical in the formulation of leather polishes, cold creams, cutting oils, orchard sprays. Anyone in the manufacturing of insecticides, textile products, cosmetics, pharmaceuticals, chemical specialties, soaps, etc., will find this booklet most helpful.

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Chemical Production

A digest of plant management, design, equipment and containers for the makers of chemicals

Explosion Hazards of Hydrocarbon-CCl_4 Mixtures†

MOST gasolines and naphthas are mixtures of paraffin-series hydrocarbons and comprise such substances as pentane, hexane, heptane, octane, and others up to perhaps dodecane. Many of these hydrocarbons, when mixed with the proper proportions of air and ignited, are highly explosive. It is due to this characteristic that gasoline has become so important as a fuel in internal-combustion engines. Gasoline and naphtha also are used in the industry as solvents and cleaning agents.

Hydrocarbon mixtures may be made less hazardous by adding some incombustible liquid, such as carbon tetrachloride. Barrier[1] reports the amount of carbon tetrachloride that must be added to different naphthas to render such mixtures free from fire and explosion hazards. He found that the amount of carbon tetrachloride that must be present in the final mixture of naphtha and carbon tetrachloride varied with the density of the naphtha. Of the naphthas tested the amount of carbon tetrachloride necessary to render such mixtures free from fire and explosion hazards ranged from 30 to 70%.

Determination of the fire and explosion hazards of carbon tetrachloride-hydrocarbon mixtures would be easy if the boiling points and vapor pressures of the 2 were the same at any given temperature. The fact that carbon tetrachloride boils at 76° C. while the boiling points of the hydrocarbons found in gasoline and naphtha may range from 37°, the boiling point of pentane, to above 200° C. (dodecane boils at 214.5° C.) complicates determination of the fire and explosion hazards of such mixtures. If a mixture of pentane (boiling point, 37° C.) and carbon tetrachloride (boiling point, 76° C.) is placed in an open container the constituent having the higher vapor pressure evaporates more rapidly than that with a lower vapor pressure, so that the vapor arising from the liquid mixture is not the same in composition as the liquid mixture remaining. Therefore, tests at different periods of time after the liquid has been exposed to the atmosphere will give different results.

Tests were made to determine the ability of carbon tetrachloride-hydrocarbon mixtures to form flammable mixtures when completely vaporized and mixed with air. Glass explosion tubes 40 to 50 cm. long and 3.5 to 4.0 cm. inside diameter were prepared. One end was sealed off while the other was closed with a tight-fitting cork. Six or 8 glass beads were placed in the tube to facilitate mixing the gases and vapors. Mixtures of the several hydrocarbons—pentane, hexane, heptane, octane, naphtha, and gasoline—with various amounts of carbon tetrachloride were prepared and tested in these tubes for flammability. Since preliminary tests showed that 50% or more of carbon tetrachloride by volume must be present in the final liquid mixtures to prevent explosions when mixed with air only such mixtures were tested.

The explosion tubes ranged in capacity from 475 to 540 cm. Two or 3 drops of the pure hydrocarbons gave flammable mixtures when vaporized in the tube. In testing any particular hydrocarbon-carbon tetrachloride mixture, the explosion tube was placed vertically with the open end at the top. The tube was purged of combustion products from a previous test by sweeping out with compressed air for 1 minute. Then 2 drops

[1] Barrier, E. A., Flash, Fire, and Explosion Tests on Mixtures of Carbon Tetrachloride and Naphtha: Ind. Eng. Chem., vol. 2, 1910, p. 16.

Table I. Flammability of Hydrocarbon-Carbon Tetrachloride Mixtures

Hydrocarbon	Formula	Percent, by volume						
		50.0 CCl_4 50.0 H.C.*	58.0 CCl_4 42.0 H.C.	62.5 CCl_4 37.5 H.C.	63.5 CCl_4 36.5 H.C.	66.7 CCl_4 33.3 H.C.	70.0 CCl_4 30.0 H.C.	75.0 CCl_4 25.0 H.C.
Pentane[1]	C_5H_{12}	Yes	Yes	Yes	Yes	No	No	No
Hexane[2]	C_6H_{14}	Yes	Yes	Yes	Yes	Yes	No	No
Heptane[3]	C_7H_{16}	Yes	Yes	Yes	Yes	Yes	No	No
Octane[4]	C_8H_{18}	Yes	Yes	Yes	Yes	No	No	No
Naphtha[5]	.....	Yes	Yes	Yes	Yes	Yes	No	No
Gasoline[6]	.....	Yes	No	No	No	No	No	No

[1] Pentane—"Practical," Eastman Kodak Co. boiling point, 33° to 36° C.; [2] Hexane—"Practical," Eastman Kodak Co. boiling point, 65° to 70° C.; [3] Heptane—"Practical," Eastman Kodak Co. boiling point, 91° to 96° C.; [4] Octane—From petroleum boiling point, 100° to 125° C.

[5] Naphtha—Solvent—

Initial boiling point	97° C.
10%	101
50%	112
95%	153
End %	155

[6] Gasoline—

Initial boiling point	31° C.
10%	57
50%	124
70%	149
90%	183
End %	205
Specific gravity	0.729

* H.C. = Hydrocarbons.

†Digested from U. S. Bureau of Mines Circular 6805, by G. W. Jones and R. E. Kennedy.

of the particular test mixture were dropped into the tube from a 1-cm. pipette, the tube was closed with the cork stopper and the liquid vaporized by shaking with the glass beads in the tube. Complete vaporization and mixing required 1 to 2 minutes. The tube was then mounted in vertically with the stoppered end at the bottom.

A test for flammability was made in a darkened room by removing carefully the stopper and passing the flame from an alcohol lamp across the open end of the tube. If the mixture were flammable, flame would pass from the open end through the tube. If 2 drops failed to produce a flammable mixture the amount of liquid added was increased and the test repeated.

In testing the flammability of hexane the following tests were made in a tube of 475 cm.^{3} capacity:

No. of drops added to explosion tube	Did flame propagate through mixture?
1	No
2	No
4	Yes
8	Yes
10	Yes
11	Yes
12	No—burned at open end only

Tests with a mixture containing 50% hexane and 50% carbon tetrachloride gave the following results:

No. of drops added to explosion tube	Did flame propagate through mixture?
2	No
4	No
6	No
8	Green flame 2/3 way up tube
9	Yes
12	Yes
16	Yes
20	Yes
24	Yes
25	No

These tests showed that the 50-50 mixture of hexane and carbon tetrachloride produced flammable mixtures with air within the limits given above. Similar tests were made with mixtures in which the proportions of carbon tetrachloride were increased until the resulting mixture was not flammable regardless of the number of drops of liquid added to the explosion tube.

A summary of such tests with pentane, hexane, heptane, octane, one sample of solvent naphtha, and motor gasoline is given in Table I. Since the flammable properties of naphthas and gasolines are due largely to the presence of hydrocarbons ranging from pentane to octane tests were confined largely to these pure hydrocarbons.

Table I shows that, with the exception of the gasoline, there must be 66.7 to 70% carbon tetrachloride by volume present in the mixture to prevent propagation of flame. For the gasoline tested there must be at least 58% of carbon tetrachloride in the final mixture to prevent propagation of flame. Less carbon tetrachloride is required for gasoline than for the pure hydrocarbons tested because about 30% of the gasoline had a boiling point about 150° C., and consisted of hydrocarbons having a molecular weight higher than octane. These hydrocarbons have low vapor pressures, and it was impossible to vaporize them completely in the explosion tube.

The results given in Table I (with the exception of gasoline) represent conditions in which the mixtures were vaporized completely so that the proportions in the original mixtures were the same as in the vapor arising from the mixture.

Heavy Chemicals

Survey of Outstanding Recently Granted Patents

A method of producing anhydrous and absolute alcohols has recently been patented (U. S. Nos. 1,985,204-5), and is essentially the passing of alcohol vapors through a bed of highly absorptive alumina which has been activated by calcining at a temperature between 300 and 800 degrees C. In some cases, the alumina is previously impregnated with a hygroscopic salt.

A process for making acetoacetanilid, consisting of treating aniline with diketene and recovering the acetoacetanilid from the reaction liquor, has just been patented, U. S. No. 1,982,675.

A recently patented process for the improvement of the quality of commercial sulfur comprises converting the commercial sulfur into gaseous hydrogen sulfide, absorbing the latter in a liquid containing a compound capable of combining with the hydrogen sulfide to form a compound which liberates elemental sulfur in very finely divided form when the liquid is subjected to the influence of an oxygen-containing gas, subjecting the liquid to the influence of an oxygen-containing gas to complete the conversion of the commercial sulfur of colloidal fineness, and recovering thereby an improved commercial sulfur.

According to a patented process (U. S. No. 1,983,672) beeswax substitutes are produced by directly oxidizing aliphatic petroleum hydrocarbons.

In Patent No. 1,983,733, basic chromium sulfate is produced by introducing liquid sulfur dioxide into an aqueous solution of a chromic salt characterized by having a lower specific gravity than the sulfur dioxide in the liquid state.

Patents—Industrial Chemicals and Apparatus

Preparation soluble cutting compound, consisting of reaction products of mineral oil; castor oil; rapeseed oil; potassium hydroxide; and sodium carbonate; mixed and diluted with water. No. 1,979,250. Emil F. Butts, Tacoma, Wash.

Method making an adhesive starch product; using corn starch. No. 1,979,257. Fred. O. Giesecke, Evanston, Ill., to International Patents Development Co., Wilmington, Del.

Preparation mixed synthetic oil; heating polyhydric alcohol with a frosting drying oil; final step heating partially esterified polyhydric alcohol with a polybasic acid until resinification occurs. No. 1,979,260. Chester G. Gauerke, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method converting iron oxide to iron chloride. No. 1,979,280. Thos. A. Mitchell, Denver, Colo., to Hughes-Mitchell Processes, Inc., Denver, Colo.

Process for removal of color from colored higher alcohols containing mixture obtained by catalytic hydrogenation of oxide of carbon under pressure and boiling above 165° C.; by treatment with metallic sodium as decolorizing agent. No. 1,979,303. John C. Woodhouse, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method recovering hematite from pulp containing same, and quartz and feldspar activated by copper sulfate; subjecting same to froth flotation operation, the pH value of pulp being between 3.0 and 6.0. No. 1,979,324. Antoine M. Gaudin, Salt Lake City, Utah.

Process for breaking a petroleum emulsion of the water-in-oil type; subjecting same to action of a demulsifying agent, obtained by chlorination of the crude aldehyde-containing oxidation product, derived by partial oxidation of petroleum distillate. No. 1,979,347. Claudius H. M. Roberts, Long Beach, Cal., to Tretolite Co., Webster Groves, Mo.

Process production 3.6 diamino 2-alkyl pyridine; heating mixture of 2-alkyl pyridine with sodamide and an inert liquid dispersing agent; adding water and isolating the 3.6 diamino 2-alkyl pyridine. No. 1,979,351. Herman J. Schneiderwirth, New York, N. Y.

Manufacture white zinc-base pigment, containing zinc oxide as an essential part; particles of which pigment are individually coated with a film of a water-insoluble zinc salt of oxalic acid. No. 1,979,379. Henry A. Gardner, Washington, D. C.

Manufacture pigment; suspending solid pigment particles in a flowing stream of a suspending gas. No. 1,979,380. Henry A. Gardner, Washington, D. C.

Process dry cleaning; applying to articles a non-aqueous solvent and a detergent having alkalinity sufficient for substantially neutralizing the fats and fatty acids in the detergent and those transferred to the solvent from article being cleaned. No. 1,979,399. Ralph A. Morgen, Kansas City, Mo.

Process preparing aliphatic organic acids; contacting compound from the monohydroxy aliphatic alcohols, the alkyl ethers, or the alkyl esters group, with an activated charcoal catalyst, in presence of CO. No. 1,979,449. Gilbert B. Carpenter, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process preparation aliphatic organic acids. No. 1,979,450. Gilbert B. Carpenter, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method and apparatus for recovery of condensates. No. 1,979,451. Kenneth S. Clapp, Cleveland, O.

Process stabilization of suspensions; composition of a dye, water, and cellulose sodium glycollate in an amount less than 1%. No. 1,979,469 Alfred Julius Johnson, Pennsgrove, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method preparing getter material, containing barium and aluminum No. 1,979,506. Stanton Umbreit, West Orange, N. J., to Radio Corp. of America, Delaware.

Method manufacturing ethyl acetate from an inorganic salt of acetic acid and the reaction product of ethylene and sulfuric acid which contains a substantial quantity of diethyl sulfate. No. 1,979,515. Wm. S. Wilson, Boston, Mass., to Merrimac Chemical Co., Inc., Everett, Mass.

Preparation of an ester of acetic acid, selected from the group of ethyl, isopropyl and butyl esters from the corresponding alkyl sulfates, obtained by combining gaseous olefines with concentrated sulfuric acid. No. 1,979,516. Wm. S. Wilson, Brookline, Mass., to Merrimac Chemical Co., Everett, Mass.

Process production aliphatic organic acids. No. 1,979,518. John C. Woodhouse, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process preparation aliphatic organic acids. No. 1,979,519. John C. Woodhouse, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Apparatus and method of making solid CO_2. No. 1,979,556. Chas. L. Jones, Pelham, and Wm. H. Fitzpatrick, Jackson Heights, N. Y., to Adico Development Corp.

Preparation ester of hydroxybenzoic acid. No. 1,979,559. Lucas Kyrides, Webster Groves, Mo., to Monsanto Chemical Co., St. Louis Mo.

Production unsaturated wax-like products; subjecting higher unsaturated fatty ketones to hydrogenation to effect partial saturation of said ketones until wax-like products are produced. No. 1,979,586. Donald K. Tressler, Pittsburgh, Pa., to Mathieson Alkali Works, New York, N. Y.

Process production pigment, which comprises finely grinding an iron oxide reduction sludge, in an aqueous alkaline medium, and calcining the ground sludge. No. 1,979,595. Robt. O. Wood, Hamburg, N. Y., to National Aniline & Chemical Co., Inc., New York, N. Y.

Process production ester-like conversion casein products; acting with an alkylene oxide on an aqueous, from neutral to weakly acid suspension of casein, until product shows an alkaline reaction. No. 1,979,601. Rudolf Bauer, Cologne-Deutz, and Gustav Mauthe, Cologne-Holweide, Germany, to I. G., Frankfort-am-Main, Germany.

Production abietic acid ester. No. 1,979,671. Durain C. Butts, Sandusky, O., to Hercules Powder Co., Wilmington, Del.

Manufacture strong, non-brittle cellulose acetate thermoplastic; through combination of cellulose acetate, a plasticizer, and solvents; drying out volatile elements to produce hardness or brittleness, finally converting into a strong tempered mass by soaking in water free from solvent. No. 1,979,672. Amerigo F. Caprio, Newark, N. J., to Celluloid Corp., Newark, N. J.

Method for lowering susceptibility of asphalt to temperature change; contacting with heated asphalt chlorine in admixture with air; air being in greater amount than chlorine. No. 1,979,676. Orin R. Douthett, Perth Amboy, N. J., to Barber Asphalt Co., Phila., Pa.

Preparation bitumen having low susceptibility to temperature changes, a high melting point for a given consistency, and containing chlorine not in excess of .53%; treatment bitumen with chlorine and air. No. 1,979,677. Orin R. Douthett, Passaic, N. J., to Barber Asphalt Co., Phila., Pa.

Process for separating vapors from gaseous mixtures. No. 1,979,682. Mathias Frankl, Augsburg, Germany, to American Oxythermic Corp., New York, N. Y.

Preparation alkyl esters of the aliphatic carboxylic acids; by reacting an olefinic hydrocarbon, CO, and an organic compound selected from the group consisting of an alcohol and a compound which under the conditions of the reaction decomposes to form an alcohol. No. 1,979,717. Walter E. Vail, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method utilizing basic open-hearth furnace slag. No. 1,979,753. James E. Lose and Ralph H. Watson, Munhall, Pa.

Preparation wax polish; a mixture of hard wax and a petrolatum wax incorporated in a light petroleum oil, dispersed in a set aqueous solution No. 1,979,787. Maure H. Arveson, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Preparation brake dressing; using zinc, lead, tin, talc, a binder composed of a lubricating oil, wool grease, solution of rubber, and a solution of rosin. No. 1,980,016. Walter R. Thurston, Los Angeles, Cal.

Process separating or purifying terpene and hydroaromatic alcohols. No. 1,980,030. John William Blagden, Loughton, and Walter Edward Huggett, London, England, one-third to Howards & Sons., Ltd., Ilford, England.

Process for resolution of oil-water emulsions. No. 1,980,118. Chaplin Tyler, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process treating aqueous bituminous emulsions; incorporating in emulsion a finely divided oxide of an amphoteric element. No. 1,980,192. Jacob M. Fain, Brooklyn, N. Y., to Patent & Licensing Corp., New York, N. Y.

Method manufacture beet sugar; precipitating saccharate from cold waste water. No. 1,980,257. Geo. M. Derby, Westport, Conn., to The Dorr Co., Inc., New York, N. Y.

Continuous process of producing aluminum chloride and recovering metallic aluminum from finely divided material containing aluminum. No. 1,980,263. John G. G. Frost, Cleveland, Ohio, to National Smelting Co., Cleveland, Ohio.

Process bleaching beeswax; treating was with permanganate in presence of a dilute mineral acid, continuing treatment until the manganese of the permanganate is converted into a soluble salt. No. 1,980,273. Arthur Hough, Passaic, N. J., to Theodor Leonhard Wax Co., Haledon, N. J.

Manufacture coated material of oil cloth type; coating comprising heat treated China wood oil, a semi drying oil of the soya bean or fish oil group, and a suitable filler. No. 1,980,309. Arthur M. Agnew, Maplewood, N. J., to Chadeloid Chemical Co., New York, N. Y.

Process bleaching wax; treating molten wax with an acid mixture of a permanganate and phosphoric acid, being diluted with water, and containing soluble iron and aluminum compounds. No. 1,980,338. Arthur Hough, Passaic, N. J., to Theodor Leonhard Wax Co., Haledon, N. J.

Process manufacturing sulfonated oils, fats or acids, by treatment with sulfuric acid. No. 1,980,342. Rudolf Kern, Oschatz, Germany, to Chemische Fabrik R. Baumheier Aktiengesellschaft, Zschollau, near Oschatz, Germany.

Process solidification of organic isocolloids containing unsaturated high molecular acids. No. 1,980,366. Laszlo Auer, Budapest, Hungary, to J. Randolph Newman, Washington, D. C., as trustee.

Apparatus for mutual treatment of gases and liquids at high velocities. No. 1,980,522. Charles Gilbert Hawley, Chicago, Ill., to Centrifix Corp., Cleveland, Ohio.

Process producing an activated clay; by treatment with acid in water solution. No. 1,980,569. Daniel S. Belden and William Kelley, Los Angeles, Cal., to Filtrol Co. of Cal., Los Angeles, Cal.

Manufacture secondary cell: when ready for use consisting of a container, an electrolyte of a solution of a salt of manganese, a negative electrode containing a manganese oxide, and a positive electrode of a higher oxide of manganese. No. 1,980,606. Edmundo Almeida, London, England, one-half to Arthur Du Cros, Sussex, England.

Preparation protective coating or inhibitor for use in a nitriding process; using a cementitious material consisitng of ammonium phosphate in solution, boric acid in water solution, a pigment including a tin powder, ground silica, and ground kaolin. No. 1,980,670. Harold A. Eckman, Oak Park, and Henry W. Maack, Chicago, Ill., to Crane Co., Chicago, Ill.

Production a double salt containing the components Na, NH_4 and CO_3 in the ratio of 1:1:1 and water of crystallization. No. 1,980,691 Robert Burns MacMullin, Niagara Falls, N. Y., to Mathieson Alkali Works, Inc., New York, N. Y.

Process for increasing concentration of a practically water-insoluble aliphatic monocarboxylic acid ester. No. 1,980,711. William J. Bannister and Ignace J. Krchma, Terre Haute, Ind., to Commercial Solvents Corp., Terre Haute, Ind.

Manufacture a chemical container. No. 1,980,727. Eugene A. Hults, Saltville, Va., to Mathieson Alkali Works, Inc., New York, N. Y.

Process for production of ferric oxide and other metal values from pyrites. No. 1,980,809. Stanley Isaac Levy, London, England.

Process production basic titanic sulfate, insoluble in water, but readily soluble in acids. No. 1,980,812. William Basil Llewellyn and Howard Spence, Manchester, England, to Peter Spence & Sons, Ltd., Manchester, England.

Apparatus for production carbon black. No. 1,980,827. Forrest C. Reed, Kansas City, Mo.

Process regenerating a spent, supported platinum catalyst; impregnating said catalyst with a liquid preparation of a volatile reducing agent, completely removing liquid preparation from catalyst. No. 1,980,829. Earl S. Ridler, Shaker Heights, Ohio, to Grasselli Chemical Co., Cleveland, Ohio.

Process clarifying chlorinated solutions; in sewage disposal. No. 1,980,896. Clifton N. Windecker, Painesville, O.

Manufacture fire-resisting cellular clay; by compounding clay, dolomite and gypsum with an acid solution, No. 1,980,954. Clarence S. Matheny, Haydenville, Ohio, to National Fireproofing Corp., Pittsburgh, Pa.

Preparation product consisting of a 4-alkylphenol of more than 5 carbon atoms in the alkyl group, and halogen substituents in the 2.6 positions. No. 1,980,966. Frederick F. Blicke, Ann Arbor, Mich., to Regents of the University of Michigan, Ann Arbor, Mich.

Lubricating apparatus; compressor for heavy non-fluid lubricants. No. Ill.

Apparatus for producing diphenyl. No. 1,981,015. William H. Williams, Midland, Mich., to Dow Chemical Co., Midland, Mich.

1,980,984. Ernest W. Davis, Oak Park, Ill., to Alemite Corp., Chicago,

Production artificial marble composition; being mixture of cement, marble dust and a mineral coloring ingredient, made into a plastic composition by a solution of sodium silicate, boracic acid, casein and salammoniac. No. 1,981,043. Arvid Hede, Detroit, Mich., to Cinder Chrome Co., Detroit, Mich.

Manufacture basic arsenate of zinc in finely divided form; produced by the action of arsenic acid on a suspension of zinc oxide in presence of sodium hydroxide. No. 1,981,044. Oscar F. Hedenburg, Pittsburgh, Pa., to Rex Research Corp., Toledo, Ohio.

Process production barium sulfate. No. 1,981,094. Alexander L. Duval d'Adrian, Alton, Ill., to Ingram & Duval, Inc., Baltimore, Md.

Methods sealing joints between foils of cellulose derivatives; using solvent for the cellulose derivative of low volatility and weak solvent action. No. 1,981,141. Amerigo F. Caprio, Newark, N. J., to Celluloid Corp., Newark, N. J.

Production ortho-phosphoric acid, wherein a phosphate-containing material is decomposed to form ortho-phosphoric acid in admixture with other products. No. 1,981,145. Cornelius H. Keller, San Francisco, Cal., to Minerals Separation North American Corp., New York, N. Y.

Preparation carbon disulfide and hydrogen sulfide; contacting a mineral hydrocarbon oil with an excess of molten sulfur in the presence of a catalyst favorable to the reaction of hydrocarbon constituents of the oil with the sulfur. No. 1,981,161. Paul H. Bodenstein, Petersburg, Va., to Meigs, Bassett & Slaughter, Inc., Philadelphia, Pa.

Production plastic sulfur; heating mixture of elemental sulfur and an arsenic sulfide to a temperature above 200° C.; rapidly cooling resulting fluid to a temperature below melting point of the sulfur. No. 1,981,232. Wm. A. Hamor and Werner W. Duecker, Pittsburgh, Pa., to Texas Gulf Sulphur Co., Bay City, Texas.

Preparation emulsifying agent; comprising a protective colloid and a heterocyclic quaternary ammonium salt containing an acyclic carbon chain having at least 10 carbon atoms. No. 1,981,292. William Todd and Anthony James Hailwood, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., London, England.

Method making non-hydrated crystalline sodium diphenyl-para-sulfonate. No. 1,981,337. Wesley C. Stoesser and Robert F. Marschner, Midland, Mich., to Dow Chemical Co., Midland, Mich.

Process oxidation, in the liquid state, of from solid to liquid non-aromatic hydrocarbons having at least 8 carbon atoms, mixtures of such hydrocarbons, and waxes, by blowing with a gas containing free oxygen. No. 1,981,384. Adolf v. Friedolsheim, Ludwigshafen-am-Rhine, and Martin Luther, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Preparation acid hardening fixing bath; using sodium thiosulfate, alum, an organic acid, a hardening agent, and an ester of boric acid. No. 1,981,391. Harold D. Russell, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Preparation liquid hardener for use with a solution of sodium thiosulfate to make an acid fixing bath; using aluminum chloride and sodium sulfite. No. 1,981,426. Lowell E. Muehler, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Cell having anode and cathode compartments for electrolytic decomposition of alkaline metal halides. No. 1,981,498. Victor Engelhardt and Nikolaus Schonfeldt, Berlin-Charlottenburg, Germany, to Siemens & Halske, Aktiengesellschaft, Siemensstadt, near Berlin, Germany.

Process forming an aqueous dispersion of asphalt; using stearin pitch and a dilute aqueous solution of a non-stabilizing alkali. No. 1,981,522. Oscar Frederick Neitzke, Belmont, Mass.

Level regulator for viscous liquids. No. 1,981,530. William Thomas, Bogota, N. J., to Pneumercator Co., New York, N. Y.

Process shrinking wood; first saturating wood by immersion in a bath of hot but not boiling linseed oil containing sodium chloride. No. 1,981,567. Alfred G. Olsen, Elkhorn, Wis.

Production casein film of high transparency, containing small amount of methyl diphenyl amine. No. 1,981,588. Henry V. Dunham, Bainbridge, N. Y.

Process for removing mucilaginous substances, coloring matter, and other impurities from cotton seed oil; heating oil with small amount of an anhydrous, solid ester from boric acid, and an aliphatic polyhydric alcohol; then mechanically separating precipitated impurities. No. 1,981,605. Max Schellmann, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Production an aqueous emulsion; mixing an aliphatic amine and a fatty acid, having not more than 5 carbon atoms and but 1 carboxyl group, after heating adding a wax and boiling water. No. 1,981,608. Harry Bennett, Brooklyn, N. Y.

Process decreasing foam in liquids; by adding a portion of the higher boiling organic oxygen-containing compounds obtained as by-products of the catalytic synthesis of methanol by pressure hydrogenation of carbon oxide. No. 1,981,634. Roger W. Richardson and Richard B. Schneider, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del

Process decreasing foam in aqueous liquids; adding a mixture of liquid organic compounds obtained by the hydrogenation of carbon oxide under high pressure. No. 1,981,635. Richard G. Clarkson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method carbonizing an electrode for an electron discharge device; preglowing electrode to remove occluded gases, and coating with a colloidal graphite solution. No. 1,981,652. George E. Long, Orange, N. J., to Bell Telephone Laboratories, Inc., New York, N. Y.

Production solid carbon dioxide ice direct from liquid CO; by gradually releasing pressure within a closed receptacle containing liquid CO, so as to cause the CO to assume a dense, solid form. No. 1,981,675. Philipp Stapp, Munich, Germany.

Apparatus for production of solid CO. No. 1,981,676. Philipp Stapp, Munich, Germany.

Production hard cemented carbide material; containing tungsten carbide, tantalum carbide, alumina, and a metal of the cobalt, nickel and iron group. No. 1,981,719. Gregory J. Comstock, Edgewood, Pa., to Firth-Sterling Steel Co., McKeesport, Pa.

Apparatus and process for dispensing measured charges of liquefied gas. No. 1,981,729. Edward W. Harvey, Highland Park, N. J., to The Barrett Co., New York, N. Y.

Process of separating constituents of a mixture containing an oil and a mixture of alcohols; alcohols having been obtained by the catalytic hydrogenation of a carbon oxide under high pressure, which comprises adding methanol to the mixture. No. 1,981,758. Hans Svanoe, Fairville, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production plastic composition, for repairing rubber or leather articles; being mixture of pure para crude rubber dissolved in a solvent; fine asbestos coated with white lead and magnesia being thoroughly mixed therein. No. 1,981,769. Nicola S. Archetti, Germantown, Pa.

Process reacting a gaseous mixture of an olefinic hydrocarbon, steam, and carbon monoxide, thereby producing an aliphatic carboxylic acid; step of passing gaseous mixture over a catalyst containing an acid metal salt of an acidic oxide. No. 1,981,801. Gilbert B. Carpenter, Bellemoor, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture carboy container. No. 1,981,812. Peter Anthony Rossa, Willistone Park, N. Y., one-half to William G. Bjorkstedt, Jamaica, L. I., N. Y.

Apparatus for counter-current treatment of two immiscible liquids. No. 1,981,818. Thomas C. Whitner, Jr., Elizabeth, N. J., to Standard Oil Development Co., Bayways, N. J.

Preparation heat exchange medium; a vegetable oil and oleic acid. No. 1,981,849. Phillip H. Elliott, Charleston, W. Va., and Ward E. White, Columbus, Ohio, to Chemical Manufacturing Co., Point Pleasant, W. Va.

Manufacture sulfuric ester salts; being treatment of elaidyl alcohol with the addition product of sulfur trioxide and a tertiary base. No. 1,981,901. Hugh Mills Bunbury and Alfred William Baldwin, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., London, England.

Production soluble drier for paints and varnishes; using a drying metal, fatty acids of coconut oil, and cold naphtha. No. 1,982,0·8. Robert A. Dunham, Long Beach, Cal., to Union Oil Co. of Cal., Los Angeles, Cal.

Method recovering the pigment, fatty acids and retained fibres from the waste liquor of de-inking operations; soaps being used as the de-inking reagents. No. 1,982,129. Sidney D. Wells, Appleton, Wis., and William B. Cramer, Denver, Colo., to Lewis L. Alsted, Appleton, Wis.

Process preparing acetic acid anhydride by catalytic decomposition of acetic acid vapor, using a metal phosphate as catalyst. No. 1,982,154 Alfred Dierichs, Leverkusen-am-Rhine, and Leonhard Weiss, Wiesdorf, Germany, to I. G., Frankfort-am-Main, Germany.

Method manufacturing organic acids from alcohols. No. 1,982,160 Henri Martin Guinot, Melle, France, to Usines De Melle, Melle, Deux-Sevres, France.

Method preparing phenol derivative. No. 1,982,180. Frits E. Stockelbach, Montclair, N. J., to Harold H. Fries, doing business as Fries Bros., New York, N. Y.

Production aluminum chloride; acting with carbon monoxide and chlorine on material containing alumina at about red heat. No. 1,982,194. Johannes Brode and Carl Wurster, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Process making monocarboxylic acids; passing vapors of a dicarboxylic acid at between 250 and 500° C. over a lead oxide catalyst. No. 1,982,195. Johannes Brode and Adolf Johanssen, Ludwigshafen-am-Rhine, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Process producing monocarboxylic acids; passing vapors of a dicarboxylic acid at between 250 and 500° C. over a bismuth oxide catalyst. No. 1,982,196. Johannes Brode, Ludwigshafen-am-Rhine, and Adolf Johannsen, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Process producing monocarboxylic acids; passing vapors of a dicarboxylic acid at between 250 and 500° C. over a cadmium oxide catalyst. No. 1,982,197. Johannes Brode, Ludwigshafen-am-Rhine, and Adolf Johannsen, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Production anhydrous lubricant; using graphite, anhydrous lime soap, and lead mahogany soap. No. 1,982,200. Lawrence C. Brunstrum, Chicago, Ill., and William P. Hilliker, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Method treating carbon dioxide gas to remove odors and moisture; by compressing gas and subjecting it to activated carbon and porous granular aluminum oxide. No. 1,982,223. Floyd J. Metzger, New York, N. Y., and Arthur A. Backus, South Orange, N. J., to U. S. Industrial Alcohol Co., New York N. Y.

Process removing caustic soda from mixtures thereof with caustic potash; treating a solution of the mixed caustic with sulfur dioxide, and separating the sodium sulfite which forms. No. 1,982,241. Charles Julian Aydelotte, Wilmington, Del., Waldo R. Caverly, Carneys Point, N. J., and Walter H. Wright, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation coating composition; mixture of a cellulose derivative, a resinous substance, a plastifier, and solid opaque pigment particles, imparting to coating a deep soft color in direct combination with a surface sheen of permanently pearly lustre. No. 1,982,280. Wm. W. Bell, Englewood, N. J., to Celluloid Corp., Newark, N. J.

Production hydrocyanic acid; one process mentioned comprising preparation of a mixture of ammonia gas, water vapor and hydrocarbon vapor, heating mixture to obtain the acid. No. 1,982,407. Thomas Sherlock Wheeler, Northwich, England, to Imperial Chemical Industries, Ltd., London, England.

Manufacture of a premolded expansion joint; consisting of a mixture of 5% polymerized China wood oil, 85% bituminous material, and 10% finely divided material. No. 1,982,506. Albert C. Fischer, Chicago, Ill., to Philip Carey Manufacturing Co., Ohio.

Process for continuous refining of mineral oils with liquid SO_2 and like volatile solvents. No. 1,982,513. Wolfgang Grote, Berlin-Wilmersdorf, Germany, and Paul Obergfell, New York, N. Y., to Edeleanu Gesellschaft m. b. H., Germany.

Method producing olefine hydrocarbons; by hydrogenating aliphatic hydrocarbons containing a conjugated double bond in presence of metallic copper. No. 1,982,536. Granville A. Perkins, So. Charleston, W. Va., to Carbide & Carbon Chemicals Corp., New York, N. Y.

Equipment Booklets

E311. The Aluminum Co. of America, Pittsburgh, Pa. Every month *Aluminum News Letter* reports the newest and most novel uses for aluminum. Those in the chemical industry working on corrosion problems find watching this booklet each month a profitable and pleasant undertaking.

E312. American Society For Testing Materials, 260 S. Broad st., Philadelphia. Society is now ready to distribute copies of the text of the Edgar Marburg Lecture, "Water As An Engineering And Industrial Material," delivered by Sheppard T. Powell, noted Baltimore consulting chemical engineer, at the June annual meeting of the Society.

E313. By-Products Steel Corp., Coatesville, Pa. New leaflet describes sheered plates, pressed shapes, and steel blanks available, together with a short notation on the service possible.

E314. Bendix Products Corp., Industrial Fan Division, Randolph Cautley, sales representative, 230 Park ave., N. Y. City. Ventilation is, of course, a major problem in many divisions of the chemical industry, in fact, it might be said in most of them it is of prime importance. Bendix Products is now producing a complete line of fans and general ventilating equipment and a new booklet supplys technical data. Of special importance is the data given on the new Bendix "Mobile" Aerospot and also the stationary models.

E315. Fisher Scientific Co., Pittsburgh, Pa. Latest issue of *The Laboratory* discusses means of making scientifically correct dust determinations.

E316. The O. Hommel Co., 209 4th ave., Pittsburgh, Pa. *The Ceramic Forum* is a comparatively new-comer in the house-organ field, but its format, tabloid, and the interesting and varied items in its news columns make it well-worthwhile reading to anyone in the ceramic industry.

E317. LaMotte Chemical Products Co., 414 Light st., Baltimore, Md. Latest leaflet discusses "Determining the pH of Unbuffered Substances."

E318. The Ohio Carbon Co., 12,508 Berea rd., Lakewood, Ohio. A new 64-page booklet, "The Brush Phase of Motor Maintenance," deals in practical non-mathemtical terms with the causes and cure of sparking, excessive wear, etc., of brushes, commutators and slip-rings of direct and alternating current motors, generators, etc. Since many of these troubles are due to faults in other parts of the machines, the book describes briefly, and illustrates with diagrams, the conditions of sparkless running and the effects of the applied load upon them; thus simplifying the detection of troubles before they become serious. Other sections of the book deal with brush characteristics, selection and manufacture, and with suggestions for proper maintenance methods on Brushes, commutators and slip-rings.

E319. Pangborn Corp., Hagerstown, Md. New booklet describes the new centrifugal blast cleaning machine that cleans various size and shape castings without the use of compressed air. This machine cleans loads up to 18 cu. ft. in bulk and averaging 2,200 lbs. in weight, in times which vary from 7 to 15 minutes, depending upon the characteristics of the castings.

E320. The Patterson Foundry & Machine Co., East Liverpool, Ohio. Four-page circular describes the "Typhoon" portable power mixer for paints, oils, solvents, chemicals, dyes, varnishes, inks, lacquers, polishes, and similar products.

E321. Pfaltz & Bauer, Inc., 300 Pearl st., N. Y. City. "pH Testing by the Indicator Strip Method" is a new booklet which describes a method of pH testing which avoids all difficulties met in testing highly colored, turbid, viscous, semi-solid mediums, usually the conditions most often prevailing in industrial manufacturing.

E322. Pulmosan Safety Equipment Corp., 176 Johnson st., Brooklyn, N. Y. New leaflet discusses various types of portable lamps and other electrical safety devices most essential in the electrical equipment of chemical plants.

E323. The Pyrometer Instrument Co., 103 Lafayette st., N. Y. City. New illustrated catalog covers Pyro immersion pyrometer for foundry use.

E324. Raymond Bros. Impact Pulverizer Co., 1302 N. Branch st., Chicago, Ill. A 6-page folder describes a new development in fineness control through the use of Raymond roller mills with the addition of the patented "Whizzer."

E325. Carl Schleicher & Schull Co., 167 E. 33 st., N. Y. City. A second, revised and enlarged edition of "Filtrations in Chemical Laboratories," a handbook on filtering operations for the chemist and with an appendix on large-scale production filtrations in manufacturing plants.

E326. Worthington Pump & Machinery Corp., Harrison, N. J. New leaflet describes Worthington Monbloc centrifugal pumps, 2-stage, types G, GA, GB. Other leaflets of the same company include:

E327. Centrifugal pumps, single-stage volute, type L, No. 8.

E328. Centrifugal pumps, single-stage volute, type L, Nos. 3 to 6.

E329. The Mine Safety Appliances Co., Pittsburgh, Pa. A new booklet describes an automatic carbon monoxide warning instrument.

Containers

E330. Chase Bag Co., 250 W. 57th st., N. Y. City. *Bagology* on your desk each month will not only keep you informed on latest developments in bags but will prove delightfully different reading on many subjects too numerous to mention.

E331. Bagpak, Inc., 220 E. 42 st., N. Y. City. A really outstanding booklet, describing (with splendid illustrations) the patented features of one of the most revolutionary introductions in the bag container field in many years. While the booklet is designed primarily for the fertilizer manufacturer, every chemical executive in any way charged with the responsibility of packaging will be neglecting a worthwhile opportunity unless he reads a copy from cover to cover to determine just where these several bag advantages can be utilized.

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Tannic Acid for Burns

Skilled mechanics among Chicago's firemen have developed a new device for emergency treatment of flame victims—a spray gun for saturating burns with tannic acid.

Patents—Fine Chemicals

Process preparing chloro-bromo-ethanols. No. 1,979,614. Erich Goth, Wuppertal-Elberfeld, Friedrich Kayser, Wuppertal-Hammerstein, and Martin Kuhn, Wuppertal-Elberfeld, Germany, to Winthrop Chemical Co., New York. N. Y.

Process separating meta cresol from metacresolpara cresol mixtures. No. 1,980,384. Frederick Comte, Webster Groves, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Separation para cresol from a liquid phenolic mixture containing same, using oxalic acid. No. 1,980,385. Frederick Comte, Webster Groves, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Manufacture a light-sensitive layer; using compound from group of artificial polymeric carboxylic acids. No. 1,981,102. Max Hagedorn and Gerhard von Kujawa, Dessau in Anhalt, Germany, to Agfa Ansco Corp., Binghamton, N. Y.

Process decomposing phosphate compounds of rare earth metals. No. 1,981,126. Rudolf Schulze, Bitterfeld, Germany, to I. G., Frankfort-am-Main, Germany.

Coal-Tar Chemicals

New Process for Tar Distillation

A recently patented method of distilling tar consists of the following steps: collecting fresh hot coal distillation gases from the ovens or retorts of a coal distillation plant, burning a portion of these gases while they are still at a high temperature after their production, and still contain tar constituents in vapor form, blending the resultant hot combustion gases with another portion of the coal distillation gases which are still hot after their formation so as to produce blended gases of higher temperature than said coal distillation gases, bringing the blended gases into contact with tar so as to distill off oils therefrom and then cooling the resultant gas and vapor mixture to form a distillate containing both constituents originally present in the tar distilled and constituents originally contained in the hot coal distillation gases.

Patents—Coal Tar Chemicals

Preparation mono alkyl ethers of 1.4-dihydroxy-anthracene. No. 1,979,628. Georg Kranzlein and Ernst Runne, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, New York, N. Y.

Process for removal of ammonia and hydrogen sulfide from gases. No. 1,979,934. Christian Johannes Hansen, Essen-Ruhr, Germany, to Koppers Co. of Delaware, Pittsburgh, Pa.

Manufacture resorcinol in flake form. No. 1,979,971. Ivan Gubelmann, So. Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method recovering ammonia from coal gas with solid superphosphatic material as ammoniated superphosphate. No. 1,980,006. Mark Shoeld, Mt. Lebanon Township, Allegheny County, Pa., to Koppers Co. of Delaware, Pittsburgh, Pa.

Method purifying fuel gases of ammonia. No. 1,980,007. Mark Shoeld, Mt. Lebanon Township, Allegheny County, Pa., to Koppers Co. of Delaware, Pittsburgh, Pa.

Process for recovery of benzol and its homologues from solvents. No. 1,980,009. Heinrich Schoneborn, Kettwig-Rhur, Germany,. to Koppers Co. of Delaware, Pittsburgh, Pa.

Method recovery by-product ammonia. No. 1,980,010. Fred. W. Sperr, Jr., Pittsburgh, Pa., to Koppers Co. of Delaware, Pittsburgh, Pa.

Process making pure 1-amino-2.3-dimethylanthraquinone, by nitrating a crude mixture of isomeric 1.2 and 2.3-dimethylanthraquinone with at least one molecular proportion of nitric acid. No. 1,980,162. Otto Bayer, Leverkusen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Retort for use in low temperature distillation of carbonaceous material. No. 1,980,245. Roland Addy and Sidney Gill, Barnsley, and Charles Wm. Tozer, Westminster, England, to Carlton Main Colliery Co., Ltd., Barnsley, England.

Process for production of sulfo-acids of high molecular weight. No. 1,980,414. Kurt Lindner, Oranienburg, Germany, to Oranienburger Chemische Fabrik Aktiengesellschaft, Oranienburg, Germany.

Manufacture the N-bis-hydroxyethylaminonitroaryls of the benzens series forming in the purified state yellow to red crystals, being difficultly soluble in the cold in aliphatic and aromatic hydrocarbons and water, forming salts with inorganic acids, not distillable at ordinary pressure. No. 1,980,536. Hans Lange, Dessau in Anhalt, Germany, to General Aniline Works, Inc., New York, N. Y.

Manufacture 2-nitrodiphenyl; nitrating diphenyl with strong nitric acid in presence of a solvent of the carbon tetrachloride and chloroform group. No. 1,980,537. Hans Lange, Dessau in Anhalt, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation beta-rho-hydroxypropyloxyalkylamino benzenes and the rho-alkylesters thereof. No. 1,980,538. Hans Lange, Dessau in Anhalt, Germany, to General Aniline Works, Inc., New York, N. Y.

Preparation c-substituted pyrimidines of the anthraquinone series. No. 1,980,549. Heinrich Raeder, Leverkusen-Schlebusch, Germany, to General Aniline Works, Inc., New York, N. Y.

Method making hydrogenation products of ketones of the pyridine and piperidine series. No. 1,980,638. Georg Scheuing and Ludwig Winterhalder, Nieder-Ingelheim-am-Rhine, Germany, to C. H. Boehringer Sohn, Nieder-Ingelheim-am-Rhine, Germany.

Apparatus and process for distilling coal and other carbonaceous materials. No. 1,980,828. Harry S. Reed and Ralph D. Lamie, East Lansing, Mich.

Process for separation of components of a mixture of phenols; using an aromatic amine. No. 1,980,901. William Henry Bentley, Wallasey, and Benjamin Catlow, Oswaldtwistle, England, to William Blythe & Co., Ltd., Church, England.

Production artificial masses, suitable as bases for varnishes; using a homogeneous mixture of a chlorinated rubber material and a polymeric water-insoluble mono-vinyl compound soluble in liquid hydrocarbons of the benzene series. No. 1,980,959. Guido Schultze, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Production anthraquinone derivatives; being in form blue to green crystals, soluble in water, and of use in dyeing vegetable fibers. No. 1,981,295. Klaus Weinland, Leverkusen-I. G. Werk, Germany, to General Aniline Works, Inc., New York, N. Y.

Production organic nitro compounds; nitrochlorobenzenes. No. 1,981,311. Miles A. Dahlen, Wilmington, Del., and Wm. L. Foohey, Pennsgrove, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production of a halogenated aralkylaryl ortho carboxylic acid having formula $Ar\text{-}CH_2\text{-}Ph\text{-}COOH$. No. 1,981,360. Alphons O. Jaeger, Mt. Lebanon, and Lloyd C. Daniels, Crafton, Pa., to American Cyanamid & Chemical Corp., New York, N. Y.

Process producing froth in a liquid; mixing a gas with the liquid in presence of a xylenol in the solid state at a temperature of 40° C. No. 1,981,506. Mahlin S. Hansen, Indianapolis, Ind., to Peter C. Reilly, Indinapolis, Ind.

Process production press-molding masses by condensation of phenols with formaldehyde; condensing initial substances, in such proportions that more than 1½ mols. of methylene groups are used to 1 mol. of phenol, into a fusible resin. No. 1,981,514. Max Koebner, Ludwigshafen-am-Rhine, Germany, to F. Raschig, G. m. b. H., Ludwigshafen-am-Rhine. Germany.

Preparation intermediates for rhodamine dyestuffs; an isopropylamino benzene compound. No. 1,981,515. Lucas P. Kyrides, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., New York, N. Y.

Preparation intermediates for secondary alkylated rhodamine dyes; a mono-secondary-aralkyl-amino aromatic compound. No. 1,981,516. Lucas P. Kyrides, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., New York, N. Y.

Method for deriving low-boiling point liquid hydrocarbons from coals of the peat, lignite, and bituminous class; using an alkaline acetate. No. 1,981,614. George Francis Michot-Dupont, Vincennes, France, to "Physical Chemistry Research Cy," Wilmington, Del.

Method removing low boiling constituents from creosote oil. No. 1,981,626. Gregory E. McCloskey, South Orange, N. J., to The Barrett Co., New York, N. Y.

Process preparing acetic acid anhydride by catalytic decomposition of acetic acid vapor; catalyst being an alkali metal phosphate. No. 1,982,153. Alfred Dierichs, Leverkusen-am-Rhine, and Leonhard Weiss, Wiesdorf-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Production sulfamino-phenyl-methyl-pyrazolones; process of causing about molecular quantities of a 5-hydroxyaminophenyl pyrazole and a chlorosulfonic acid to react upon each other in the presence of an acid-binding agent. No. 1,982,163. Winfrid Hentrich, Wiesdorf-am-Rhine, and Josef Hilger, Cologne-Mulheim, Germany, to General Aniline Works, Inc., New York, N. Y.

Production valuable compounds of the anthracene series. No. 1,982,311. Max Albert Kunz Mannheim, Karl Koeberle and Gerd Kochendoerfer, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York, N. Y.

Apparatus for carbonization and distillation of solid hydrocarbons. No. 1,982,523. Gustav Komarek, Chicago, Ill., to Berwind Fuel Co. of Delaware, Chicago, Ill.

Production aromatic azo compounds, containing as coupling agents at least one bile acid amide of a 1.8-aminonaphthol sulfonic acid. No. 1,982,553. Arthur Stoll and August Binkert, Basel, Switzerland, to Chemical Works Formerly Sandoz, Basel, Switzerland.

Process for improving liquid carbonaceous substances by destructive catalytic hydrogenation. No. 1,982,556. Ludwig von Szeszich, Constance, Germany, to Deutsche Gold-und-Silber-Scheideanstalt vormals Roessler, Frankfort-am-Main, Germany.

New Equipment

A monthly digest of new equipment of interest to the chemical and process industries.

A new line of hermetically sealed power capacitors about ½ the size and ⅓ the weight of conventional oil filled units is announced. Individual units are impregnated with a new fireproof impregnating medium, are housed in welded cases of .05 sheet steel, and equipped with rugged solder seal porcelain terminal bushings. Because of their compact, lightweight, and leakproof design, these new capacitors expand the economical use of power factor correction in many industrial plants. The compact individual units are assembled in newly designed welded racks, frames, or cabinets for any sort of mounting including pole mounting. Since the engineering design is based on standard component parts, practically any size capacitor is available from 5 kva at 230 volts up to 1200 Kva at 6900 volts.

QC 203

Finding Buried Pipes Easily

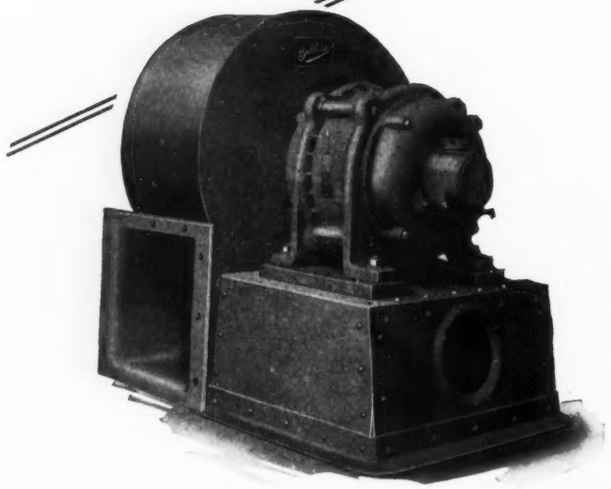
A machine is now on the market which will detect the presence of metallic objects buried beneath ground surface, such as pipes, etc. In a chemical plant of any size such a piece of equipment would prove invaluable despite the best possible file of layout blue-prints.

QC 204

Automatic Monoxide Warning Signal

A well-known manufacturer of mine safety equipment announces the exceedingly timely development of a carbon mon-

Rubber-lined for Long Life!



Here's the fan that took the grief out of handling corrosive fumes,—the fan that stays on the job from three to thirteen times as long as standard fans!

It lasts because it's lined with pure, soft, live gum rubber applied by the one-and-only "Vulcalock" method, processed by the B. F. Goodrich Co.

Buffalo Rubber-Lined Fans give unconditional satisfaction — thousands in use — on hundreds of applications.

Let our engineers make recommendations. Ask for bulletin 2424.

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"Buffalo" Rubber-Lined Exhaust Fans for Corrosive fumes

''' Modern CHEMICAL *Developments*

XIII

1. PREVENTS CHAFING ON CARTONS

Cartons containing bottles or other heavy articles sometimes lose their glossy, new appearance when shipping or handling causes them to rub against each other. This is prevented and their appearance is improved, by coating with clear, transparent nitrocellulose lacquer.

2. IMPROVED TURPENTINE

Improvements recently made in the processing of Hercules Steam-distilled Wood Turpentine result in a product with milder odor, faster evaporation, reduced cutting action, and better characteristics for use in shoe polish and wax solutions.

3. FIREPROOF MARINE PAINT

Paint made with Tornesit, the new chlorinated rubber material, protects against fire as well as against water and acids. It adheres well to wood, metal, or concrete.

4. PREVENTS SKINNING

Terpene Phenol has proved to be an effective means of preventing skinning in synthetic resin varnishes.

5. PROTECTS PRINTED SURFACES

Labels, cover papers — any paper that is difficult to keep clean — may be made washable and will soil less easily if coated with nitrocellulose lacquer. This treament also adds brilliancy to colors.

6. FORMULATING RESISTANT FINISHES

For use with Tornesit in the formulation of finishes to resist acids and alkalis, effective plasticizers are Hercolyn and Sulphoterpoil.

7. SAVES LABOR FOR BUILDERS

Building operations are frequently slowed up by the necessity for removing plaster or cement from window frames, plumbing, tiles, grill work, and other fixtures. They can be protected from this by applying a coat of nitrocellulose lacquer.

8. KILLS WOOD-BORING INSECTS

A compound of terpene chemicals called "Cabinol" is valuable for the control of borers that attack rustic furniture, log cabins, and fences. It is a penetrant, is toxic and repellent, but is not poisonous, caustic, or corrosive.

More detailed information on any of the above subjects may be secured by filling in this coupon.

HERCULES POWDER COMPANY
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Wilmington, Delaware

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Name.....

Address.....

Company.....

IN-23-C

oxide alarm which gives prompt warning, by ringing an electric gong when the amount of carbon monoxide in the air reaches a dangerous point. It is said to be the only available device of its type on the market. Instrument has been thoroughly tested for reliability in actual operating conditions before being placed in production. Carbon monoxide poisoning, incidently, has become the 4th largest cause of industrial diseases, accidents and death. **QC 205**

Two New Pumps Announced

A large manufacturer of pumps and kindred equipment announces a new type of totally enclosed horizontal duplex power pump that has unusual features of excellence. It is particularly adaptable for highly volatile liquids such as high-test gasolines, naphthas, butanes, propanes, etc. **QC 206**

Same manufacturer announces an advanced development of its 2 stage centrifugal pump. The low power requirements and simplicity of this modern unit make it especially applicable to all services requiring small capacity and medium discharge head. The casing, designed to withstand 150 lbs. pressure, is bolted directly to the motor frame without an intermediate distance piece, thus eliminating the necessity for a baseplate. Attention is particularly drawn to the unique impeller design, which is a unit construction consisting of 2 enclosed type impellers cast back-to-back, so that the overhung weight is actually no greater than that on a single stage pump. The impeller, which is keyed, is held firmly to the shaft by an impeller nut and the shaft sleeve, also keyed, is a separate, renewable part. Reliability is attained through the use of a motor which features oversize grease lubricated ball bearings. In this unit, the impeller is mounted directly on the motor shaft, eliminating the additional space and weight of a coupling.

This unit can be mounted vertically or horizontally, with full assurance of satisfactory performance in either case. Advanced features of design, adopted with a view of combining high efficiency and dependability, appear in these new models. The pump has steep head capacity characteristics and is ideal for: air conditioning installations, refrigeration service, boiler return and chemical process work. **QC 207**

Maintaining Constant Tank Levels

A constant level of water in an elevated tank can be maintained by means of a new controller. **QC 208**

New Improvements In Respirators

A large manufacturer of safety equipment announces several improvements in its line of respirators including anatomically shaped face cushion molded of non-toxic rubber, replaceable knitted facelet, and a new type "one way" diaphragm relief valve that gives immediate release of all exhaled air without discomfort or interfering with wearers movements. It has a chemical cartridge filter, held in position by a screw cap. All inhaled air is drawn through the cartridge and an automatic check valve prevents exhaled air from passing back through the chemical. All metal parts are non-corrosive. Several types of cartridge filters with different chemical characteristics are available.

This respirator is designed for nose, mouth, throat and lung protection against light concentrations of injurious or obnoxious gases and vapors. **QC 209**

Chemical Industries,
25 Spruce Street,
New York City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

QC 203	QC 207
" 204	" 208
" 205	" 209
" 206	

Name .....

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Plant Equipment

Unfired Pressure-Vessel Problems

Pressure-vessel problems of the petroleum industry, particularly in petroleum refining where relatively high pressures, high temperatures, and severe corrosion are frequently met, are such as to require special consideration. In order to provide a uniform basis for the construction and maintenance of unfired vessels used in this field, and at the same time not to disturb the uniformity brought about by the codes developed by the ASME Boiler Code Committee, a joint committee of the American Petroleum Institute and The American Society of Mechanical Engineers was organized. This Joint API-ASME Committee on Unfired Pressure Vessels has now completed the first edition of the API-ASME Code for Unfired Pressure Vessels for Petroleum Liquids and Gases which can be obtained from The American Society of Mechanical Engineers, 29 W. 39 st., N. Y. City. Code covers design, construction, inspection and repair of unfired pressure vessels for petroleum liquids and gases for metal temperatures not over 1,000° F. and for gage pressures above 15 lb. per sq. in. It is divided into 5 sections as follows: W—Design and Construction of Fusion-Welded Vessels; R—Design and Construction of Riveted Vessels; F—Design and Construction of Seamless Forged Vessels (In course of preparation); I—Inspection, Repair and Allowable Working Pressure of Vessels in Service; S—Material and Other Specifications.

Attention should be called to the fact that the ASME Boiler Code, Section VIII, dealing with unfired pressure vessels has been adopted as the law governing the construction of certain vessels of this type in several states and that consequently vessels within the scope of this section for use in these states must be built in accordance with the Boiler Code rules. The Joint Code does not have such a legal status. It is anticipated that many questions will arise with respect to the meaning of parts of the code, and also as to the scope of its application. These questions should be referred to the joint committee whose secretary is R. P. Anderson, 50 W. 50 st., N. Y. City. Suggestions for improvement will also be welcomed.

Plant Operation

Correct Procedure In Cleaning Acid Tanks

Following procedure is recommended for cleaning tanks or vessels in acid service. It is, of course, understood that the men doing this work should wear protective equipment—goggles and rubber gloves. For some conditions it may also be necessary to wear rubber boots. If there is a heavy concentration of acid fumes, men should not be permitted to work. If work must be carried out with a moderate concentration of fumes, the men doing the work should wear hose type gas masks taking their air supply from an uncontaminated source. The canister type of gas mask cannot be depended on to protect against heavy and long continued exposure of noxious gases.

1. Remove bottom run-off lines and all entering lines through which there is any possibility of leakage of acid; 2. With some acids, such as sulfuric, it is possible to have a hydrogen concentration within the explosive range, and to reduce the danger from this source, the vessel should be thoroughly blown out with compressed air; 3. Maintain a circulation of air through the vessel to prevent the formation of hydrogen within the explosive range; 4. Do not use electric extension cord lamps or portable electric tools in or near tanks, vessels, or equipment where hydrogen may be present or where its presence may be suspected; If a light is necessary, use an approved vapor-proof flashlight; Also exercise special care with tools or other equipment being used to avoid striking or drawing sparks; 5. Drain tank until no more acid and mud will run out and remove all mud possible by hose or other mechanical means; 6. Wash tank with as strong a stream of water as possible,

using a 2" or 2½" hose with nozzle until all mud is removed. Agitation and scraping with bars or hose may be necessary during washing to get rid of heavy caked mud; 7. Inspect tank thoroughly with an approved vapor-proof flashlight to make sure it is clean: 8. Thoroughly drain off residual water. *Chemical Safety*, News Letter of the Chemical Section of the National Safety Council.

The Literature

Articles of interest to the chemical and process industries particularly noted in a monthly review of the U. S. and foreign periodicals.

Chemical Plant Equipment. "Some Notes For Users of Chemical Plant." Describes the care and maintenance of various important items of equipment. *Industrial Chemist*, British, November, p430.

Chemical Plant Equipment. "Modern Cast Irons in Chemical Engineering," by J. G. Pearce. *Chemistry & Industry*, British, December 14, p1052.

Chemical Plant Operation. "Dyeworks Effluent Purification," by A. J. Hall. *American Dyestuff Reporter*, December 3, p661.

Chemical Plant Operation. "Industrial Hygiene and Sanitation Surveys in Chemical Establishments," by R. R. Sayers and J. M. DallaValle. *Chemical & Metallurgical Engineering*, December, p1251.

Chemical Plant Operation. "Pumping Corrosive Liquids," by Dr. D. G. McNair. *The Industrial Chemist*, British, November, p442.

Chemical Specialties. "A Study of Compensation for Sanitary Supply Salesmen." *Soap*, December, p107.

Coatings. "Newer Types of Phenolic Resins in Oil Varnishes," by George Dring. *Chemistry & Industry* (British), November 30, p1013.

Coatings. "Highlights of European Varnish-Making," by Dr. Wilhelm Krumbhaar. *Canadian Chemistry & Metallurgy*, November, p237.

Paper. "Pigments for Papermaking—Their Manufacture and Application," by A. H. Whitaker. *The Paper-Maker and British Paper Trade Journal*, December 1, p217.

Raw Materials. "Have We Any Essential Raw Materials," by Williams Haynes. *Nation's Business*, January, p22.

Raw Materials. "Sulfuric Acid—To Buy or to Build?" by Andrew M. Fairlie. *Chemical & Metallurgical Engineering*, December, p1280.

Raw Materials. "The Blast Furnace As A Chemical Plant," by Prof. C. O. Bannister. *Chemistry & Industry*, British, November 23, p991.

Raw Materials. "Nitric Acid Process for Recovery of Cellulose from Bagasse," by John H. Payne. *Industrial & Engineering Chemistry*, December, p1339.

Refrigerants. "What the Refrigerants Have Contributed," discusses the extent of use, history and sources of common refrigerants. *Refrigerating Engineering*, December, p305.

Soap. "Developments in the British Soap Industry." *Soap*, December, p21.

Soap. "Plant and Laboratory Practice in Soap Making," Soap Section of *Canadian Chemistry and Metallurgy*, December, p275.

South. "A Chemical Tourist Through The South," by Williams Haynes. The Chemical Foundation, 654 Madison ave., N. Y. City, has reprinted in booklet form the series of articles written by Williams Haynes, publisher of CHEMICAL INDUSTRIES, on the recent important chemical developments in the South, following a 8,000 mile trip of personal investigation made last summer. Copies are free and available from the Foundation.

Tanning. "The Technology of Tanning," Part I, An Historical Introduction, by Frederic L. Hilbert. *Hide & Leather*, December 8, p17.

Patents—Petroleum

Process conversion higher boiling hydrocarbon oils into lower boiling ones. No. 1,979,437. Otto Behimer, Chicago, Ill., to Texas Co., New York, N. Y.

Method sweetening sour petroleum oils. No. 1,979,448. Hugh Harley Cannon, Los Angeles, Cal., to Cannon-Prutzman Treating Processes, Ltd., Los Angeles, Cal.

Process and apparatus for converting relatively high boiling point oils into lower boiling point oils. No. 1,979,521. Joseph G. Alther, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Hydrocarbon oil cracking process. No. 1,979,532. Nicholas G. de Rachat, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Method preventing or relieving accumulation of congealed base or other constituent substances of oil in wells and the like. No. 1,979,558. John Thomas King, Pampa, Texas.

Treatment hydrocarbon oils. No. 1,979,565. Jacque C. Morrell and Gustav Egloff, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Apparatus for heating and cracking oil. No. 1,979,639. Leland L. Rebber, San Pedro, Cal., Albert S. Crossfield, Wilmington, and Edward G. Ragatz, Berkeley, Cal., to Union Oil Co. of Cal., Los Angeles, Cal.

Petroleum refining apparatus. No. 1,979,734. Edwin A. Dickinson, East Orange, N. J., to Gray Processes Corp., Newark, N. J.

Process production non-knocking motor fuel. No. 1,979,841. Mathias Pier, Heidelberg, and Friedrich Ringer, Ludwigshafen-am-Rhine, Germany, to Standard-I. G. Co., Linden, N. J.

Preparation practically water free lubricating grease; using mineral lubricating oil, aluminum soap of a higher fatty acid, and uncoagulated rubber from latex. No. 1,979,943. Edwin N. Klemgard, Martinez, Cal., to Shell Development Co., San Francisco, Cal.

Process separation wax from hydrocarbon oils. No. 1,980,071. Robt. E. Manley, Port Arthur, Tex., to The Texas Co., New York, N. Y.

Preparation motor fuel lubricating and anti-knock materials; one being mixture of a hydrocarbon fuel and dibutyl phthalate and oxalate containing vanadium chloride. No. 1,980,097. George F. Ruddies, Chicago, Ill.

Process desulfurization of hydrocarbon oils; treating oil with a halogen and a hydrogenated derivative of a heterocyclic nitrogen. No. 1,980,189. Richard F. Davis, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process for production motor fuel comprising cracked hydrocarbon distillates. No. 1,980,200. Chester W. Hannum, Danville, Ill., to Gasoline Antioxidant Co., Wilmington, Del.

Process for production motor fuel of cracked hydrocarbon distillates, normally tending to deteriorate and develop gummy substances on storage No. 1,980,201. Chester W. Hannum, Danville, Ill., to Gasoline Antioxidant Co., Wilmington, Del.

Hydrocarbon oil cracking process. No. 1,980,204. Lyman C. Huff, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Treatment hydrocarbon oil; subjecting oil to cracking conditions of temperature and pressure, and separating the same into vapors and residue. No. 1,980,215. Wm. H. McAdams, Newton, and Harold C. Weber, Milton, Mass., to Universal Oil Products Co., Chicago, Ill.

Process producing ash-free lubricating oils of low-viscosity-temperature coefficient; subjecting a viscous lubricating oil admixed with a suitable diluent to treatment with concentrated sulfuric acid. No. 1,980,377. Arthur B. Brown and Arthur W. Neeley, Whiting, Ind., to Standard Oil Co. (of Indiana), Chicago, Ill.

Process for cracking of hydrocarbon oil in the vapor phase. No. 1,980,462. Andrew McGregor Wood, Miri, Sarawak, Borneo.

Method of stabilizing oils, which have been sweetened by means of copper-containing reagents, against deterioration through catalytic oxidation, using an alkaline sulfide. No. 1,980,555. Walter A. Schulze and Frederick E. Frey, Bartlesville, Okla., to Phillips Petroleum Co., Bartlesville, Okla.

Process of separating from practically wax-free mineral lubricating oils, a paraffinic fraction having a lower viscosity temperature coefficient than the oil treated. No. 1,980,649. Vanderveer Voorhees, Hammond, Ind., and John A. Anderson, Chicago, Ill., to Standard Oil Co., Chicago, Ill.

Apparatus and process for cracking hydrocarbon oils. No. 1,980,839. Joseph B. Webre, Port Arthur, Texas, to Texas Co., New York, N. Y.

Oil refining apparatus. No. 19,378. Reissue. Chas. H. Leach, Roselle, N. J.

Apparatus for cracking hydrocarbons. No. 1,981,128. Thomas De Colon Tifft, Westfield, N. J., to Sinclair Refining Co., New York, N. Y.

Apparatus for heating fluids. No. 1,981,129. Hans Tropsch, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Hydrocarbon oil cracking process; initially distilling oil and separating resulant vapors from unvaporized oil. No. 1,981,144. Jacob Benjamin Heid, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Process vapor phase cracking of hydrocarbon oil, by direct contact with combustion gases as the heating medium. No. 1,981,150. Robert Pyzel, Chicago, Ill., to Universal Oil Products Co., Chicago, Ill.

Apparatus and process for catalytic treatment of petroleum. No. 1,981,305. Ulric B. Bray, Los Angeles, Ralph C. Pollock and David R. Merrill, Long Beach, Cal., to Union Oil Co. of Cal., Los Angeles, Cal.

Method of heat treating hydrocarbon oils and production of motor fuel therefrom. No. 1,981,572. Willis F. Sims and Venus U. Cloer, Wichita Falls, Tex., to Panhandle Refining Co., Wichita Falls, Tex.

Process obtaining purified oil-soluble sulfonates from petroleum oils. No. 1,981,799. Hyym E. Buc, Roselle, N. J., to Standard Oil Development Co., Bayways, N. J.

Method polymerizing gaseous and light liquid materials, containing large amounts of olefines. No. 1,981,819. Peter J. Wiezevich, Elizabeth, N. J., and James M. Whitely, Jr., Roselle, N. J., to Standard Oil Development Co., Bayways, N. J.

Process producing a resin from a cracked petroleum tar. No. 1,981,824. Stewart C. Fulton, Elizabeth, N. J., to Standard Oil Development Co., Bayways, N. J.

Method heat treating hydrocarbon oil. No. 1,981,826. Edward B. Peck, Elizabeth, and Carl E. Kleiber, Irvington, N. J., to Standard Oil Development Co., Bayways, N. J.

Method converting relatively high boiling hydrocarbon oils into lower boiling products. No. 1,981,842. Percy C. Keith, Jr., Bernardsville, N. J., to Gasoline Products Co., Inc., Newark, N. J.

Process cracking higher boiling hydrocarbon oils to produce lower boiling hydrocarbon oils. No. 1,981,914. Eugene C. Herthel, Chicago, Ill., to Sinclair Refining Co., New York, N. Y.

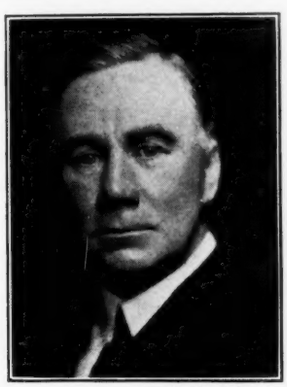
Preparation insecticide; a cold-vulcanized oil containing a chlorinated hydrocarbon. No. 1,981,926. Joseph Savage, Runcorn, Fred Holt, Weybridge, and Richard Thomas, Stockton-on-Tees, England, to Imperial Chemical Industries, Ltd., London, England.

Process converting petroleum oils. No. 1,982,091. Arnold R. Workman, Malverne, N. Y., to Doherty Research Co., New York, N. Y.

Chemical Markets & News

Garvan Demands Advances from the Administration that the Chemical Industry Will Be Protected in All Negotiations on Trade Agreements—U. S. Chemical Foreign Trade At Very Satisfactory Levels—

Appearing for the 2nd time within a month before the Senatorial reciprocal trade agreement information committee, Francis P. Garvan on Dec. 17 demanded that the American Chemical industry be granted full protection in any negotiations made with other countries on possible trade agreements.



—Blank & Stoller

FRANCIS P. GARVAN

"Are we to come here next week for Holland?"

"From wing tip to wing tip, from stem to stern, from cap to boot, the efficiency of our national defense is and will be determined by the comparative progress of our chemical industries and their ability to draw upon an ever increasing number and ever extending knowledge of American chemists," said Mr. Garvan. "Therefore, the products of the chemical industries are not within the intention of the President and the Congress in the passage of the reciprocal trade agreement act.

"The Reciprocal Trade Agreement Act was urged and passed upon the theory of sacrificing inefficient industries not essential to national defense for the advantage of imports of the products of those industries from other countries, and, therefore, cannot be applied to industries essential to national defence, as the President declared in the message asking for the legislation."

Occasion of Mr. Garvan's most recent appearance before the committee was in connection with a hearing held on a proposed agreement with Switzerland, a large dye producer. Mr. Garvan spoke not only in his official capacity as head of the Chemical Foundation but also for the Chemical Alliance, the Synthetic Organic Chemical Manufacturers' Association and the Manufacturing Chemists' Association.

Attacks Importers' Stand

Mr. Garvan directed his attack at importers of Swiss and German dyes for failure to appear at the meeting personally to press their case. Summing up, he pointed out that the U. S. domestic chemical industry's position is plainly that because of its popular character it should and must be removed from any bartering schemes and that this policy must be plainly understood in every direction. "I do ask you seriously," said the plain-speaking Chemical Foundation head, "Are we going to come here next week for Holland, and go through the same thing? I do ask you to transmit a desire or a request on the part of the chemical industry, to the administration, that in this Swiss treaty we get a definite answer to the proposition that we ask, that chemistry, in its development, is out of the trade zone."

18% More Exports

U. S. exports of chemicals and allied products were maintained at relatively high levels during the year just ended, particularly industrial chemicals, paint products, and fertilizers, Claudius T. Murchison, Director, Bureau of Foreign and Domestic Commerce, reports in a review of recent trends in the American Chemical industrial field.

Exports of such products were valued at $113,000,000 during the first 11 months of the year, a value increase of 18% over the corresponding period of '33, when exports amounted to $95,500,000. Every major group on the list, except naval stores and sulfur, shared in the value gain, he states, and many groups showed substantial increases in tonnage.

Industrial chemicals led the list with export shipments valued at $19,588,000 during the first 11 months of the year, a gain of almost $5,000,000 over the corresponding period of '33. Many important items of this group showed impressive volume gains.

Calcium chloride shipments increased 90% to 58,000,000 lbs. and sodium compounds increased 10% to 439,000,000 lbs. Potassium compounds, organic and inorganic acids, aluminum sulfate, and copper sulfate were among other items increas.ng both in quantity and value.

Importance of Naval Stores

Industrial chemicals were followed in importance by naval stores, gums and resins, exports of which were valued at $13,315,000, a value almost identical with exports of these products during the '33 period. In this group gum rosin exports totaled $5,962,000 in value showing little or no change from the first 11 months of '33, but the volume declined from 914,000 to 714,000 bbls. Gum spirits of turpentine shipments were lower both in quantity and value, the quantity declining 25% to 9,000,000 gals. and the value from $5,-260,000 to $4,511,000.

Paint Exports Up 24%

Export shipments of paints, pigments and varnishes attained very satisfactory levels during the year, according to Mr. Murchison, being valued at $12,652,000 during the first 11 months of the year, a gain of approximately 24% over the '33 period. In this group exports of ready mixed paints, stains and enamels, accounted for 1,665,000 gals., valued at about $3,000,000, and represented an increase of approximately 55%, both in quantity and value, over the first 11 months of '33. Carbon black shipments were somewhat lower in volume but the value increased about $75,000 to a total of $4,631,000 for the first 11 months of the year.

Phosphate Rock Gains

Due to heavier exports of phosphate rock, superphosphates, and other fertilizers and fertilizer materials, this group advanced 25% in quantity to 11,80,000 tons, and 55% in value to $11,439,000 during the first 11 months of '34, compared with the corresponding period of the preceding year.

Other groups of importance among chemicals and allied products exports showing gains in '34 were industrial chemical specialties which increased 12% to $10,767,000; toilet preparations, 18% to $4,770,000; essential oils 29% to $1,-875,000; crude drugs, largely ginseng, 37% to $1,442,000; coal tar products 8%

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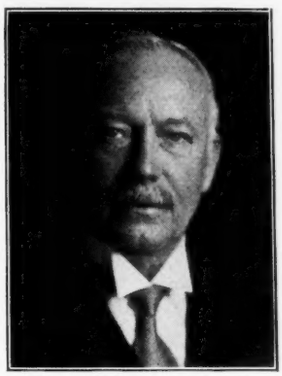
to $12,037,000; industrial explosives, 41% to $2,000,000; and pyroxylin products, 42% to almost $4,000,000. Sulfur exports declined $400,000 in value to $9,100,000 for the first 11 months of 1934.

The outlook for chemical and allied products exports for 1935 is good, Mr. Murchison reports. Dollar exchange is favorable and improved conditions in many of our best foreign markets should lead to heavier demand for American chemical products, particularly chemical specialties, phosphate and other fertilizers, paint products, and heavy chemicals, according to Director Murchison.

Obituaries

¶ Carbon Black Industry Loses a Leader In Death of Edwin Binney

Edwin Binney, 69, head of Binney & Smith, of a heart attack while visiting a grandson at the University of Florida



EDWIN BINNEY

Dean of the carbon black industry helped build America's international supremacy in that field

at Gainesville, Fla. At the age of 17 he became a paint salesman for a company in Springfield, Mass. A year later he opened a N. Y. City office for the same company. With a cousin he formed the firm of Binney & Smith a few years later. He was the founder of the Columbian Carbon Co. Mr. Binney was president and a director of the Sebs Chemical Co.; vice-president and a director of the Coltexo Corp., Columbian Gasoline Corp., the Southern Carbon Co., Piney Oil and Gas Co., Southern Gas Lines, Inc., Western Carbon Co., Mississippi River Fuel Corp. and Peerless Carbon Black Co.

He was an enthusiastic fisherman and hunter and was active in Protestant Episcopal Church affairs. He belonged to the Sons of the American Revolution, the Riverside (Conn.) Yacht Club, the Innis Arden Golf Club at Old Greenwich, Conn., and the Congressional Country Club at Washington, D. C.

Mr. Binney's survivors include his widow, the former Miss Alice Stead of London, England, whom he married on Oct. 26, 1886, and 3 daughters, Mrs. Frank M. Upton of Fort Pierce, Fla., the former wife of George Palmer Putnam, publisher, and Mrs. Allan F. Kitchel and Mrs. James A. G. Davey, both of Old Greenwich, Conn. Mr. Binney was the grandfather of David Binney Putnam, youthful explorer and author, whose stepmother is Mrs. Amelia Earhart Putnam, famous flier. Mr. Binney's son, Edwin, Jr., noted swimmer, died in '28.

Washington

¶ Census Bureau Releases '33 Preliminary Chemical Production Figures—Other Important Government Publications Available—

Census of Manufactures, Bureau of the Census, Washington, completes in record time preliminary figures on miscellaneous chemicals. Report is known as Immediate Release, Industry No. 608. Preliminary figures for '33 indicate an aggregate value for this group of $186,673,094, while the comparable figure for '31 totals $237,762,405.

Total value of products made in '33 by establishments in the census classification, "Chemicals Not Elsewhere Classified," amounted to $476,502,663 (at f.o.b. factory prices), according to a preliminary report compiled from data collected in the biennial census of manufactures taken in '34, released Nov. 23 by the Director of the Census, William L. Austin. This value compares with $533,175,179 reported for '31 and $738,048,386 for '29.

Decrease in total value of chemical productions was 10.6% between '31 and '33 and 27.8% between '29 and '31, an aggregate decline of 35.4% over the 4 years.

This industry, as defined for census purposes, embraces establishments whose principal products are (1) acids, (2) nitrogen and fixed-nitrogen compounds, (3) sodium compounds, (4) potassium compounds, (5) aluminum compounds and alums, (6) coaltar products, (7) plastics, and (8) miscellaneous organic and inorganic chemicals. Preliminary reports giving detailed production statistics for these groups have been issued.

Worthwhile Reading and Reference

U. S. Bureau of Mines is issuing without charge copies of Report of Investigations 3251, entitled "Engineering Studies and Results of Acid Treatment of Wells, Zwolle Oil Field, Sabine Parish, La."

Supt. of Documents, Washington, reports following printed codes obtainable (5c each): Animal glue; China Clay production; adhesive and ink; automotive chemical specialties; alloys.

Report of the U. S. Tariff Commission on "Production and Sales of Dyes & Other Synthetic Organic Chemicals in '33" is now available from the Supt. of Documents, Washington, 10c a copy.

NRA Appointments

NRA appoints W. J. Brown of Washington as deputy administrator in charge of the paper and pulp section of the Chemical Division.

NRA has approved of H. R. Drackett, The Drackett Co., Cincinnati; H. M. Sinclair, Jr., Sinclair Mfg. Co., Toledo; L. J. Gumpert, B. T. Babbitt, N. Y. City; Chester Myers, E. Myers Lye Co., St. Louis, Mo.; and James D. Swan, Penn Salt, Chicago, as members of the lye industry code authority.

Trade Commission

P. & G. agrees to cease using the word "olive" or words "olive oil", either independently or in connection with other words as part of its trade name or brand for its products, so as to imply that products are composed 100% of olive oil, when this is not true. In the event product is composed in substantial part of olive oil and words "olive oil" are used to designate such product, then words "olive oil" shall be accompanied by some other word or words printed in equally conspicuous type to indicate that the product is not made wholly of olive oil.

Dangerous Quicklime

A boiling sea of quicklime sent 22 San Francisco firemen to the hospital. Heavy rains drenched 100 tons of lime stored in a burning warehouse.

COMING EVENTS

Associated Glass & Pottery Manufacturers, and Western Glass & Pottery Association, Fort Pitt Hotel, Pittsburgh, Jan. 7-15.

Nat'l Association of Dyers & Cleaners, convention and exposition, Book-Cadillac, Detroit, Jan. 29-31

N. Y. State Sewage Works Association, McAlpin, N. Y. City, Jan. 15.

American Society of Civil Engineers, N. Y. City, Jan. 16-18, Secretary, Geo. T. Seabury, 33 W. 39th St., N. Y. City.

Third National Knitwear Industrial Exposition, Grand Central Palace, N. Y. City, A. B. Coffman, Manager, Feb. 11.

American Ceramic Society, Hotel Statler, Buffalo, Feb. 17-22.

Technical Association of the Pulp & Paper Industry, Waldorf-Astoria, N. Y. City, Feb. 18-21, R. G. Macdonald, secretary, 122 E. 42nd st., N. Y. City.

Federated Textile Industries, Inc., annual dinner, Waldorf, Feb. 28.

American Society for Testing Materials, regional meeting, Philadelphia, Mar. 6.

Electrochemical Society, New Orleans, Mar. 21-23.

A. C. S., 89th meeting, N. Y. City, Apr. 22-27.

American Water Works Association, annual meeting, Netherland Plaza, Cincinnati, May 6-10.

American Institute of Chemical Engineers, spring meeting, Wilmington, Del., May 14-16.

American Society for Testing Materials, annual meeting, Book-Cadillac, Detroit, June 24-28.

Exposition of Chemical Industries, Grand Central Palace, N. Y. City, Dec. 2-7.

LOCAL TO NEW YORK*

Jan. 11, '35, Society of Chemical Industry in charge of meeting 4 technical societies, Perkin Medal awarded.

Feb. 8, joint meeting, 4 technical societies, A. C. S. in charge.

Secretaries of Chemical Associations and Groups allied to chemistry (also the process industries) are urged to make use of this column.

* Chemist Club unless otherwise stated.

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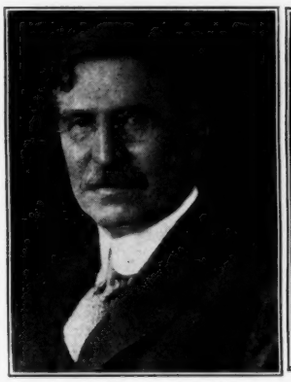
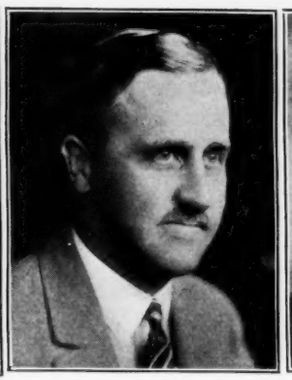
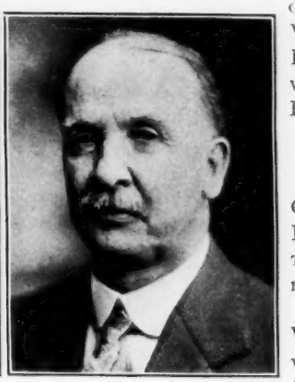
Associations

¶ Bartow to Lead A.C.S. In '36—Trades Dinner Scheduled for March 21—Safety Council News—Hendrickson Again Heads Gum Importers—

Prof. Edward Bartow, head of the department of chemistry and chemical engineering in the State University of Iowa, is elected A. C. S. president for '36. Prof. Bartow won over 6 other candidates in a national poll of 18,000 members, final choice being made by the Society's Council from the 4 receiving the largest number of votes. He will serve as president-elect during '35.







DR. CHARLES L. REESE ILLINOIS' PROF. ROGER ADAMS IOWA'S PROF. EDWARD BARTOW

Retiring, present, and future leaders of the American Chemical Society.

Prof. Roger Adams, University of Illinois, is now president of the Society, succeeding Dr. Charles L. Reese, retired du Pont chemical director. Prof. Adams is a member of President Roosevelt's Science Advisory Board.

Thomas Midgley, Jr., of Worthington, Ohio, vice-president of Ethyl Gasoline Corp., was re-elected director-at-large for 1935-'36. Mr. Midgley is chairman of the Society's Board of Directors.

Erle M. Billings of Rochester, N. Y., is again named director from New York and New Jersey. Mr. Billings is secretary of the Division of Industrial Engineering Chemistry.

Prof. Barstow was born in Glenham, N. Y., Jan. 12, 1870. He was graduated from Williams College in '92; received his Ph.D. from Gottingen in '95, and his D.Sc. from Williams in '23. He was assistant and instructor in chemistry at Williams from '92 to '97, and instructor and associate professor at the University of Kansas from '97 to '05.

He taught sanitary chemistry at Illinois from '05 to '20 and was director of the Illinois State Water Survey from '05 to '17 and chief of the Water Survey Division of the Department of Registration and Education during '17-'20. He became head of the department of chemistry at the State University of Iowa in '20.

During the World War, Prof. Bartow served in France as lieutenant colonel in the Sanitary Corps. He was decorated with the Medaille d'Honneur. In '05 he was a member of the commission to investigate the cause of coal mine explosions in Kansas, and in '08 was secretary of the Lake Michigan Water Commission. He served on the Commission on Standards of Water for Interstate Carriers in '13 and '22, and was secretary-treasurer of the Illinois Water Supply Association from '09-'17. He is a member of the Council of the International Chemical Union and was a delegate to the Ninth International Congress of Chemistry in Madrid this year.

Prof. Bartow has served the A. C. S. in many capacities and is a member of its Board of Directors. Other associations of which he is a member include the American Association for the Advancement of Science, Society of Chemical Industry, American Institute of Chemical Engineers, American Society of Civil Engineers, Franklin Institute, American Public Health Association, National Institute of Social Science, National Economic League, the Illinois Society of Engineers, Illinois Academy of Science, Iowa Engineering Society, and the Iowa Academy of Science. He is past president of the American Water Works Association and the Kansas Academy of Science.

Goal—1,500 Diners

The Tenth Annual Drug, Chemical and Allied Trades Dinner will be held March 21, at the Waldorf-Astoria, in N. Y. City. Committees are being set-up and plans are underway to make this the most successful dinner sponsored by the Section. Last year over 1,200 executives and members of the chemical and allied industries attended, hearing Postmaster James A. Farley defend the "New Deal."

Safety Council Activities

E. L. Root of the Celluloid Corp. is the new editor of the News Letter on Chemical Safety, published by the chemical section of the National Safety Council. He asks plant safety men, plant superintendents to cooperate by sending in experiences.

The National Safety Council wishes to keep on file all no-injury records in the chemical industry exceeding 400,000 man-hours. Any company which has made such a record but has not reported, is requested to do so. Future records exceeding 400,000 man-hours should also be reported as soon as made.

Mid-Winter Eastern Safety Council will be held at the Berkeley-Carteret, Asbury Park, Jan. 31 and Feb. 1. Chemical safety executives will attend in large numbers, early reservations indicate.

Delaware A.C.S.

Dr. Warren K. Lewis, M.I.T. professor of chemical engineering, and Dr. W. F. Von Oettingen, director of the new du Pont medical division and laboratory, were on the December program of the Delaware A.C.S. section.

Phila. Chemical Club Notes

Chemical Club of Philadelphia held its Christmas party Dec. 10. Williams Haynes, publisher of CHEMICAL INDUSTRIES, was the speaker at the January meeting.

Officers elected for '35 are: President, Walter E. Wright, Harshaw Chemical; vice-president, S. J. Megargee, American Cyanamid & Chemical; treasurer, Lyman Lloyd, Alex. C. Fergusson, Jr., Co.; secretary, G. B. Heckel, Jr., *Drugs, Oils and Paints.*

Several new innovations for '35 were adopted, including several golf tournaments for the coming spring and summer.

Hendrickson For the 5th Year

Hendrick E. Hendrickson, S. Winterbourne & Co., was elected president of the American Gum Importers' Association for the 5th successive year, and other officers were re-elected at the annual meeting held, Dec. 21, at the Downtown Athletic Club, N. Y. City.

Lilly Announces New Prize

A new prize for scientific achievement in early life is reported by the A. C. S. An annual award of $1,000 has been established by Eli Lilly and Co., Indianapolis, to go to a young man or woman under 31 years of age engaged in "outstanding" research in biological chemistry in a college or university of the U. S. First presentation of the award, to run 5 years, will be made at the spring meeting of the Society in New York next April. Recipient will receive a bronze medal in addition to the sum of $1,000.

Created to encourage biological chemists at the threshold instead of at the sunset of their careers, prize is similar to the A. C. Langmuir award of the Society, founded in '31 to reward "chemical research of unusual merit" by a young man or woman. The Langmuir award emphasizes the debt industry owes to pure science.

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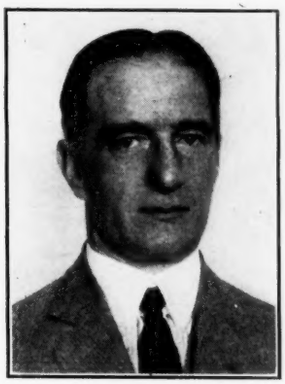
Personal

¶ E. H. Hooker Attacks "New Deal" Power Policies—Curme Receives the Perkin Medal—Father Nieuwland Designated as '35 Nichols Medalist—

Elon H. Hooker, president of the Hooker Electrochemical Co., and recognized as one of the outstanding authorities in this country on the question of power and its development, assailed President



ELON H. HOOKER

According to the N. Y. Sun, a power authority with no appreciation of the latent possibilities for huge power consumption in the waffle-iron

Roosevelt's government-owned power utilities program in a speech before the Chamber of Commerce of the State of N. Y. on Jan. 3, characterizing it as an unpardonable waste of the taxpayers' money for the development of power which would not be needed for another hundred years. Mr. Hooker analyzed TVA, but directed most of his remarks to the proposed St. Lawrence River power and water-way development. Mr. Hooker's company is a large user and buyer of power. Quoting from his own experience he stated:

"We use a great deal of power at Niagara and pay $2 less a horsepower than we do for similar quantities at Senator Norris' famous yardstick of power, the Tacoma Municipal Plant. We can get more at the same price and we have not yet felt the tentacles of the octopus or the machine guns of the gangsters. It seems to me common fairness demands this statement—I am not in favor of the development of the St. Lawrence power in the near future." Mr. Hooker was repeatedly interrupted by his audience of over 400 as they applauded again and again the salient features in his address.

Pre-eminent Inorganic Synthesis

Perkin Medal (Society of Chemical Industry) was presented Jan. 11 to Dr. George O. Curme, Jr., of the Carbide & Carbon Chemicals at a joint meeting of the Society of Chemical Industry, the American Chemical Society, the Electrochemical Society and the Societe de Chimie Industrielle, held at The Chemists' Club (N. Y.).

Award was made several months ago by a committee representing 5 national chemical societies. This medal is awarded annually for valuable work in applied chemistry and Dr. Curme was chosen for his work on the development of commercial processes for synthesis of aliphatic organic compounds such as alcohol, acetone and ethylene glycol.

Dr. E. R. Weidlein, Mellon Institute director, outlined Dr. Curme's accomplishments. Presentation of the Medal was made by Dr. Martson T. Bogert of Columbia, a past president of the Society of Chemical Industry. Dr. Curme then presented his Medal Address, "Industry's toolmaker," describing the beginning of his researches on organic synthesis at Mellon in '14 and tracing their development through to commercial operation in a plant built at Charleston, W. Va., in '25. He showed the relationship of the work done by himself and his associates to the broad movement of industrial synthetic organic chemistry in which Sir William Perkin played an important part in the early days.

George O. Curme, Jr., was born in Mt. Vernon, Iowa, Dec. 24, '88 and graduated from Northwestern in '09, spent one year at Harvard in graduate study, and received his Doctor of Philosophy degree at the University of Chicago in '13. He then spent a year as a graduate student at the University of Berlin under Emil Fischer. In '14 he accepted a Fellowship at Mellon to investigate synthesis of acetylene and olefine gases and their chemical derivatives. This work was continued on an expanding scale until '20, when the project was transferred to a semi-plant scale near Charleston, W. Va. In '20 Carbide and Carbon Chemicals was organized to exploit the results of the earlier research and to continue the commercial development of organic synthesis. Dr. Curme received the title of chief chemist of this company in '20, vice-president and director of research in '29. During his period of service with the company successful processes have been developed and put into commercial operation for synthetic production of ethylene glycol, acetone, ethyl alcohol, methyl alcohol, butyl alcohol, acetic anhydride, glycol ethers, triethanolamine and related products. This work has, in effect, created a new division of industrial chemistry based on the synthesis of aliphatic chemicals, which has become an important factor in American industry.

Gave Us Synthetic Rubber

The '35 William H. Nichols Medal (N. Y. A. C. S. Section) has been awarded to Father Julius A. Nieuwland, professor of organic chemistry at Notre Dame. Award, one of the highest honors bestowed by chemical science in this country, goes to Father Nieuwland "for basic work on syntheses from unsaturated hydrocarbons," according to the announcement by Dr. J. M. Weiss, chairman of the jury of award.

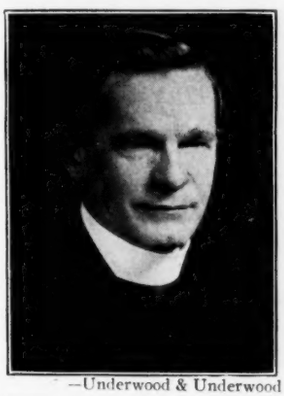
Working in a field beset with dangers, Father Nieuwland successfully carried out investigations in the chemistry of acetylene, his discoveries being utilized in subsequent research in the du Pont laboratories, which led to the development of the synthetic rubber called "Du Prene."

Father Nieuwland was engaged for many years in investigations of reactions of acetylene hydrocarbons and derivatives, a field which most investigators had shunned because the compounds were unstable and presented serious hazards of explosion.

Persisting, Father Nieuwland learned how to control these reactions and make them safe to handle in general laboratory manipulations. As a result of this work, he was able to produce a number of new and unusual unsaturated hydrocarbons and hydrocarbon derivatives.

Employing Father Nieuwland's technique in handling and controlling the reactions, chemists of the du Pont Company developed the chemical materials from which "Du Prene" is produced.

Dr. Elmer K. Bolton, now du Pont chemical director, initiated in '25, while



—Underwood & Underwood

FATHER JULIUS A. NIEUWLAND

DR. GEORGE O. CURME, JR.

One has made us independent of natural rubber supplies; the other has given to industry a long series of vital chemicals that has revolutionized numerous manufacturing processes.

he was in charge of the research work in the company's dye department, the investigation of synthetic rubber which resulted in the production of "Du Prene".

Facing unusual laboratory perils is not a new experience for Father Nieuwland. At the Catholic University in Washington during the World War he carried on researches in war gases which involved extraordinary hazards.

Ceremony at which Father Nieuwland will formally receive the medal will be an outstanding event of a week's celebration of the 300th anniversary of the founding of the American chemical industries to be held in N. Y. City in connection with the 89th meeting of the A. C. S. beginning April 22.

Father Nieuwland was born in Hansbeke, Belgium, Feb. 14, 1878. He received his bachelor of arts degree at the University of Notre Dame in 1899; in '03 he was ordained a priest in the Roman Catholic Church, joining the Congregation of the Holy Cross; in '04 he received his Ph.D. from Catholic University, and in '11 the ScD. degree from Notre Dame; he joined the Notre Dame faculty in '04 as professor of botany, and since '18 has been professor of organic chemistry; he was Dean of the College of Science from '20 to '23.

Urey Dinner Feb. 1

Chemists' Club members and board of trustees will honor Columbia's Dr. Harold C. Urey, '34 Nobel Chemistry Prize winner, at a farewell dinner on Feb. 1 on the eve of his sailing for Sweden to accept the award.

People

Dr. Irvin Lavine, professor of chemical engineering, University of North Dakota, is appointed by the National Resources Board of Washington, D. C., to the position of consultant to the North Dakota State Planning Board. In this capacity he will work with the State Board in developing a long range program for the rehabilitation of the State according to objectives laid down by the National Resources Board.

William S. Gray is chairman of the Drug, Chemical and Dyestuff Auxiliary of the N. Y. City United Hospital Fund.

Williams Haynes, publisher of CHEMICAL INDUSTRIES, has been chosen to deliver the Silas Fogg Brackett Memorial Lecture before the Princeton Engineering School of Princeton University.

Charles L. Reese, Jr., son of the retiring president of the A.C.S., has joined the editorial staff of the Wilmington *Evening Journal*.

Percy C. Magnus has been re-elected president of the N. Y. Board of Trade.

Ernest H. Klipstein has become a partner of the N. Y. Stock Exchange firm of Kohler, Sheerin & Fish.

"The Gangplank"

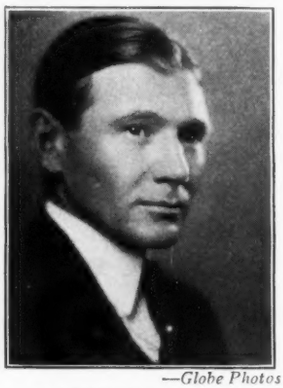
H. Walter Grote, of the United Carbon research division, Charleston, W. Va., and Mrs. Grote, sailed on the *Washington* Dec. 14 for a 3 months' vacation abroad including visits in France, Italy, Germany, Belgium, Switzerland and Holland.

C. C. Davis, chief chemist of the Boston Woven Hose & Rubber Co., is back from a short European trip.

Personnel

¶ Cyanamid Elects Douglas a Director and Vice-President—Campbell Promoted—Other Notable Changes Last Month—

As briefly announced in the December issue former Director of the U. S. Budget, Lewis W. Douglas, returns to private business as a vice-president of American Cyanamid. He was also elected a director. His keen financial ability as well as his intimate knowledge of the mining industry attracted the attention of the Cyanamid officers and directors.



—*Globe Photos*

LEWIS W. DOUGLAS

"We are started on inflation. . . ."

Mr. Douglas resigned as a member of the House of Representatives to become Director of the Budget at the request of President Roosevelt in March, '33. He had been a representative from Arizona for 7 years. As Director of the Budget, he and President Roosevelt worked out the Economy Act of last year, which cut all government salaries by 15% and sharply reduced benefits paid to war veterans. Most of these economies have since been wiped out. During his career in Congress and as Director of the Budget, he was noted for his work for Federal economy and a balanced budget.

Mr. Douglas was graduated from Amherst and from M.I.T., where he studied metallurgy and geology. He was decorated for bravery in France during the World War. He is 40 years old.

His family was active in the development of the copper-mining industry in the West. His grandfather was founder of the Phelps Dodge Corp. of Arizona, and his father is president of the United Verde Extension Mining Co. of Arizona.

Commenting on the acceptance of his new position, Mr. Douglas stated:

"I have accepted this position because I must work to make a living. My previous training has practically all been in the mining business, and the company with which I have become connected is a producer of metallurgical products. It is a type of company with which I like to work."

Mr. Douglas is in constant demand as a speaker. Breaking a silence of several months, he vigorously attacked the financial policies of the Roosevelt Administration last month before the Economic Club, N. Y. City.

"We are started on inflation as surely as if the printing presses already were running in Washington," was Mr. Douglas' answer to the defense of the Roosevelt policies made by Stuart Chase, noted economist, at the same meeting. Mr. Douglas insisted that the budget could be balanced without abandoning a single person in need of relief. The things wrecking national finance are not relief expenses but huge expenditures on other New Deal projects, he maintained.

By taking immediate steps to balance the budget, the Administration can go far toward restoring prosperity, preventing the collapse of parliamentary government and removing one cause of another European war, Mr. Douglas declared.

Mr. Douglas maintained that the budget can easily be brought into balance before 1937, and thus avoid a long chain of serious events, which he said would follow a mounting Government deficit.

Additional Responsibilities

As a further step in the recent merger of Structural Gypsum, American Powder, the Selden Co., and other former independent subsidiaries into American Cyanamid & Chemical, Arthur J. Campbell has been appointed assistant general sales manager of the corporation. This will serve to consolidate the activities of the

ARTHUR J. CAMPBELL

Becomes Cyanamid and Chemical's assistant general sales manager

newly created divisions of the corporation. Mr. Campbell at the same time will continue his duties as general manager of the structural gypsum division. A brief announcement of Mr. Campbell's promotion was given in the December issue.

Other Personal Changes

S. C. Nichols, in charge of Glidden purchases, has been made vice-president of the Durkee Famous Foods, Inc., a division of Glidden. He has moved to Elmhurst, N. Y., headquarters of the Durkee division. J. M. Stadter has succeeded Mr. Nichols. Mr. Stadter was with the Chemical & Pigments, Baltimore, in charge of purchases for 14 years.

William A. Smiley has become associated with the D. H. Litter Co.'s Philadelphia office.

Dr. Roger K. Taylor is now associated with the Porcelain Enamel and Manufacturing Co., Baltimore, in charge of the chemical laboratory.

V. L. Roberson, formerly Chicago manager for Sherwood Petroleum, has been transferred to Brooklyn, elected vice-president of the company, and is now in charge of sales. R. T. Kennedy of Cincinnati, Ohio, is now manager of the Chicago branch.

M. N. Rivenburg, former assistant sales manager of the Stonhard Co., Philadelphia, is joining the American Chemical Paint Co., Ambler, Pa., in charge of sales promotion and publicity.

Arthur G. Cailler is now in charge of the menthol, pyrethrum, camphor and agar agar departments of George Uhe Co., N. Y. City brokers.

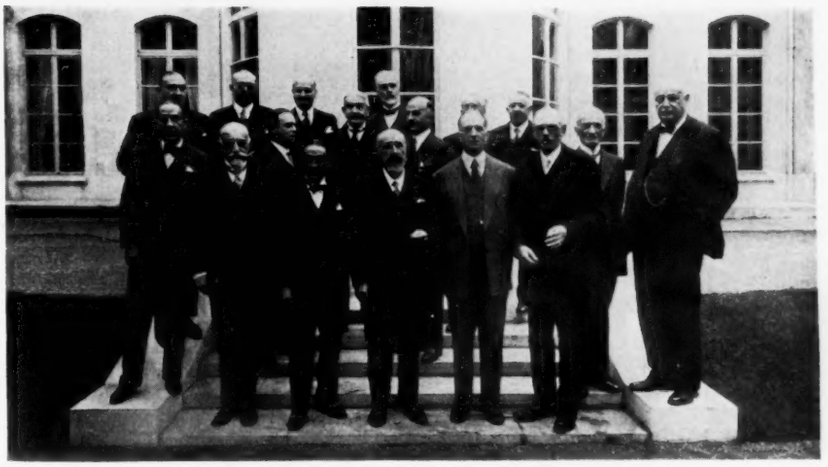
Foreign

¶ Germany Turns Once More to Synthesis as a Way Out—German Fertilizer Consumption Is Greater—Chile Enjoys a Good Nitrate Year—Jap Chemical Industry Expansion—

Fundamental changes in Germany's economic situation and more specifically the intensified efforts of the Reich Government to develop synthetic production in substitution for natural raw materials of foreign origin are factors which are having far-reaching effects upon the German chemical industry.

Branches most directly benefited by this move are those developed during and immediately after the war, and which because of abnormal conditions surrounding their origin and the increased competitive production in other countries formerly supplied by Germany, have been chronically weak and generally unremunerative.

Among such plants which have been supported largely by the older chemical branches are included the nitrogen and synthetic gasoline industries, which due to over-expansion, shrinkage of markets, and other factors have been most severely affected during depression years. Now for the first time, after years of the greatest difficulty, unremunerative plants appear to be making progress and prospects for their future seem good.



THE INTERNATIONAL HOME OF CHEMISTRY IS OPENED

Elon H. Hooker, representataive of American chemical industry joins with a distinguished group of French public officials, internationally known chemical industrialists and outstanding scientists in dedicating the beautiful "Maison De La Chemie" in Paris. Because of the assasination of King Alexander and the French Foreign Minister at Brealeaux, the original program was curtailed considerably.

The German nitrogen fertilizer industry which is said to have a capacity sufficient to supply a considerable part of the entire world demand has for years suffered from over-production. Hope for salvaging a large part of the capital tied up in this industry lies in expansion of synthetic gasoline output. It is planned to use a large part of existing plants to produce hydrogen needed in the hydrogenation process of producing synthetic gasoline from rock canal and brown-coal. One of the largest nitrogen plants in Germany expects to attain an annual production of 300,000 metric tons of synthetic gasoline shortly.

Contrasted with the cheerful outlook for newer plants which are producing synthetic products for domestic consumption, old line chemical plants which are still largely dependent upon export markets for sales face an uncertain future.

German Fertilizer Increases

Keen appreciation of the benefits accruing from judicious use of fertilizer, coupled with the improved financial condition of local agriculturists, has resulted in a considerable increase in fertilizer consumption in Germany during the past 2 years.

Fertilizer purchases in Germany were valued at 570,000,000 reichsmarks during 1933-34, accounting for more than 12% of agriculturists' expenditures for all purposes, and was the 3rd highest expenditure on the list, being exceeded only by wages and feedstuffs. During the preceding fiscal period fertilizer expenditures totalled 522,000,000 reichsmarks, an increase of 22,000,000 reichsmarks over 1931-32 and compares with a peak consumption of fertilizer, valued at 768,000,000 reichsmarks for each of the years 1928-29 and 1929-30.

Use of agricultural insecticides is limited in Germany, amounting to approximately 18,000,000 reichsmarks per annum, and constituting only a minor item in the combined operating costs of farms. Consumption has not changed materially in recent years but increased attention has been given to their use and lower costs have been effected through technical improvements, the Consul reported.

Germany is a leading purchaser of American fertilizer materials, chiefly phosphate rock, being exceeded only by Japan and Canada, according to the Commerce Department's Chemical Division. Statistics show that American fertilizer material shipped to that country during '33 were valued at $852,500, of which 155,000 tons valued at $760,750, consisted of phosphate rock.

Oil from Lignite

Formation of the Lignite Petrol Co. in Germany arouses an unusual degree of interest in commercial and political circles. Company has been formed under the auspices of the Ministry of Economics with the object of producing oil from the hydrogenations of lignite. The I. G. F. and 9 other leading German lignite producers are the shareholders and the share capital amounts to Rm. 100,000,000.

No New Alkali Plants

A new German government order prohibits erection of new plants for the manufacture of soda ash, or the extension of the capacity of existing installations. Order is in effect until the end of next year.

Chilean Nitrate Revival

Improved world demand for nitrate has brought about a marked revival of activity in Chile's nitrate industry during the past 12 months. With the depletion of

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Guaranteed CHROMIC ACID

MUTUAL CHEMICAL CO. OF AMERICA

270 MADISON AVE. NEW YORK

FACTORIES AT BALTIMORE AND JERSEY CITY MINES IN NEW CALEDONIA

foreign stocks of Chilean nitrate, production of nitrate in Chile has doubled since November of last year, and many local nitrate plants paralyzed for years have reopened. In November, '33, only 10 nitrate plants were operating in the country while at the present time 16 are in operation. The Pedro de Valdivia plant which recently resumed production after 2 inactive years has an annual capacity of 750,000 metric tons but it will not operate on a full capacity basis.

Reviewing the recent history of Chile's nitrate industry, a report by Consul Franklin B. Atwood at Santiago, shows that in the last months of '31, average monthly production was about 95,000 metric tons. Lowest monthly returns recorded in recent years was in December '32, when only 32,000 tons of nitrate were produced. By December, '33, monthly nitrate output had advanced to 41,000 tons. This improvement was maintained throughout the first 8 months of the current year and production totalled 79,000 tons in September, '34. It is estimated that 99,000 tons of nitrate will be produced in November, '34, which will constitute a record monthly total for the past 3 years.

Employment Increases

There are now approximately 20,000 workmen employed in the Chilean nitrate industry compared with 9,000 in '32. Salaries and wages have increased approximately 33% in the last 2 years. U. S. is one of the leading purchasers of Chilean nitrate. Sodium nitrate imports into the U. S. during the first 9 months of '34 totalled 268,000 tons, valued at $5,138,000, compared with only 56,000 tons, valued at $1,084,000, for the corresponding period last year, practically all of which came from Chile.

Japanese Chemical Expansion

Japanese chemical industry showed considerable further development and expansion during the current year, according to a special report made by Assistant Trade Commissioner Donald W. Smith to the chemical division of the Dept. of Commerce. Important chemical products in which Japan has either reached or is approaching self-sufficiency include ammonium sulfate, caustic soda, synthetic dyestuffs, coal-tar products, soda ash, methanol, and explosives. During the current year, commercial production was started of ammonium chloride, fuming sulfuric, benzyl chloride, ethyl acetate and aldehyde, paraformaldehyde, titanium stearite (a new product, a colloid of titanium and stearine), a special varnish, a new pyroxylin plastic claimed to have a higher tensile strength than other plastics, "Yedocol" (a vegetable granular carbon), magnesium carbonate, hydroquinone, and paramethyl amido phenol. Production of butanol, acetone, benzol, ether, caustic soda, caustic potash, bleaching powder, hydrochloric acid, pyroxylin plastics, ammonium sulfate, methanol, and sulfur all increased. Plans have been made to start the manufacture of synthetic nitric acid, anhydrous acetic acid, nerolin, vanillin, casein, and ethylacetoacetate.

New Plants, Fair Profits

A number of new chemical plants were completed and plans consummated for extensions to some of the old factories and erection of new ones, outstanding of which are one organized by the Mitsubishi interests for manufacture of sulfuric, dyes, and inorganic chemicals, and another by the Japan Iodine Co. to make a complete line of industrial chemicals.

Financial results of 18 chemical companies showed net profits for the January-June '34 period ranging from 10 to 14%, and dividends paid averaged 7%.

Foreign Notes

Acid fast dyes will be produced by the newly formed Nippon Kagaku Toryo K.K.

Chemische Industrie reports a new Soviet cadmium plant at Ordschonikidze and production of liquid sulfur dioxide at Czernoretschje.

Foreign Trade

¶ Germany Offers Fertilizer For Cotton—German Potash Industry Improves—Polish Dye Makers Renew Cartel Agreement—Guano Shipments To Be Curtailed—

Germany, needing 500,000 bales of cotton, has a delegation in this country, it is said, negotiating for some satisfactory barter basis. It is also reported that a deal is in the making whereby Germany will get the cotton from Egypt in exchange for fertilizer.

It is reported that Egypt is anxious to consummate the agreement as a means of increasing sales of cotton to Germany and because German synthetic nitrogen fertilizer is suited to Egyptian soil requirements.

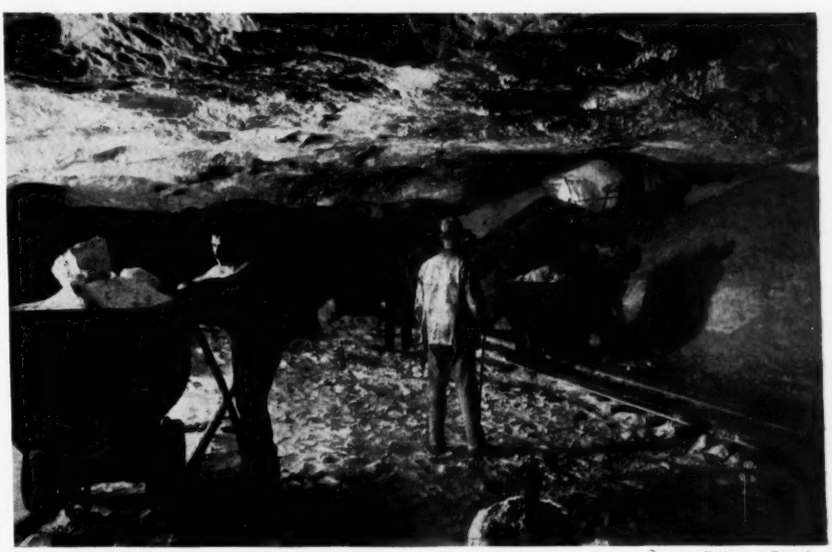
Arrangement is also in keeping with Germany's present foreign trade policy of extending barter trade relations, now being aggressively fostered, and which are necessitated by the scarcity of foreign exchange and the need for indispensable foreign raw materials, such as cotton.

An unfavorable aspect of the projected barter deal with Egypt is the fact that Egyptian cotton is high in price compared with American cotton and is, therefore, suitable for only a restricted part of the German textile industry. Proposed cotton-fertilizer transaction is similar to one consummated between Egypt and Germany 2 years ago, under the terms of which Egypt took 50,000 metric tons of German calcium nitrate, valued at approximately 5,000,000 marks, and Germany was supplied with Egyptian cotton of an equal value. The German Nitrogen Syndicate supplied the fertilizer and a syndicate of Bremen importers received the cotton. Financial details of the transaction were handled by the Dresdner Bank.

German Potash Mines Busier

Larger domestic consumption of potash fertilizer in Germany and heavier shipments to foreign markets have made it possible to resume a full 6-day working week in the mining branch of that industry thus abolishing the compulsory one-day per week holiday heretofore in force. In the refineries, number of enforced holidays has been reduced from 2 to only one per week, and increased output has in no way raised stocks to excessive levels.

While German potash exports have been recording increasingly marked gains in volume since the beginning of '34, at-



—Gilliams Service

A remarkable interior view of a German potash mine, 2,800 ft. below the level of the ground in Hanover. Despite the entry of America, Spain and Russia into the field of potash mining, German producers report a definite improvement in both domestic consumption and in the export field in the past year.

taining levels not reached since '30, these gains were achieved only through considerable price concessions in order to meet severe competition from Spain and other foreign competitors.

During the first 9 months of '34 exports from Germany of refined potash fertilizers totalled 180,941 metric tons compared with 161,316 for the corresponding period last year but the value declined from 17,629,000 RM. to 13,700,000. Exports of other potash salts increased from 357,893 metric tons to 440,308 metric tons and the value received declined from 16,135,000 RM. to 14,940,000. German potash in '34 enjoyed wide distribution in foreign markets, with the U. S. and the Netherlands outstanding customers.

German Potash Exports (Crude Potash Salts)

First 9 mos.—Quantity*		Value†	(‡)
1931	434,661	25,237,000	47.80
1932	363,608	19,062,000	45.71
1933	357,893	16,135,000	37.00
1934	440,308	14,940,000	26.71

Refined Products (Sulphate, Chloride)

1931	291,315	41,989,000	138.55
1932	178,741	21,034,000	117.44
1933	161,316	17,629,000	95.96
1934	180,941	13,700,000	60.60

* In metric tons. † In marks. ‡ Average value per metric ton in marks for month of September.

Domestic potash consumption during the year ended June, '34, was the highest in 4 years and totalled 718,000 metric tons of pure potash, or 100,000 tons more than during the preceding period, and compared with 490,000 metric tons in 1913-14.

Polish Dye Makers

Polish dye manufacturers renewed their agreement with the European Dye Cartel, Nov. 9, thus renewing the accord of '32 and continuing the marketing arrangement initiated in '27 by leading European producers of dyes.

Principal features of the new agreement are uniform credit terms and a definite obligation assumed by all members not to sell merchandise to defaulting customers. Arrangement, however, does not cover price control or the allotment of markets, as did the original pact which Poland signed when entering the Cartel several years ago.

A report from U. S. Commercial Attache Clayton Lane, Warsaw, states that all dye manufacturers in Poland including German firms represented in that country have signed the agreement which is to run for a period of one year and is to be extended for a similar period, providing the same market conditions obtain and that the majority of members do not request its termination. Small dye consumers in Lodz have already expressed dissatisfaction with the agreement on the grounds that its stipulations may make it impossible for them to continue business.

Original European Dye Cartel was formed in 1927 when French and German producers signed agreements regulating the extension of credit, price maintenance, and other features relating to the sale of coal-tar dyes. In '29 Swiss interests were brought into the Cartel through a supplementary convention and 2 years later Italian interests entered the agreement when 2 members of the Cartel acquired controlling interest in the Italian dye industry. Poland has a well developed coal-tar chemical industry which supplies a large percentage of domestic consumption and in addition exports small quantities to several countries.

We Lose 2% to the U. K.

Canadian imports of chemicals and allied products amounted to $24,475,000 for the first 9 months of '34, one-quarter more than in the same months of '33, and approximately equal to the corresponding period of '32, according to the Quarterly Reports of the Trade of Canada. Exports of $11,000,000, however, were one-seventh more than the '33 period, and three-tenths greater than '32. In the '34 period, 64% of the imports came from the U. S., and 18% from the United Kingdom, compared with 66% from the U. S. and 14% from the United Kingdom in the '32 period. Exports to both the U. S. and the United Kingdom during these 3 years declined from 44 to 25%, respectively, in '32, to 36 and 18% in '34.

An Alkali Pact?

Mention is made in a recent issue of British *Chemical Trade Journal* of a rumor of a provisional agreement said to have entered into between Soviet Union and the Belgian Solvay concern in regard to alkalies. By the terms of this agreement, it is said, Soviet Russia has consented to withdraw from European markets, which will in future be reserved to the Belgian Solvay and its associated European producers of soda ash, sodium bicarbonate, and caustic soda. In consideration, the Solvay group is said to be agreeable to withdrawing from Asiatic markets in favor of the Soviet Union. Other markets, such as South America and Australia and probably India, are to be covered by a special agreement now under negotiation.

Guano Regulations

South American agriculturists, particularly those in Chile and Peru, are favored by having close at hand a perennial source of guano, one of the best natural fertilizers known. Collections of guano in Peru during the year ended March 31, '34, were the highest for any year on record, according to a report from Commercial Attache Julian D. Smith, Lima. During this period 162,358 metric tons were recovered, compared with 133,741 tons for the preceding fiscal period and 94,700 tons for 1931-32. Of the amount collected in 1933-34 approximately 115,402 metric tons were sold to domestic consumers and 48,803 tons were exported, approximately half of which was consigned to the U. S. Bulk of the remainder was exported to Japan, England, Ireland, and continental countries. Domestic orders for the 1934-35 season already placed total 147,000 metric tons, a record for one season.

Since '09 the guano resources of Peru have been under control of a semi-official monopoly with headquarters at Lima. In order to protect the interests of local agriculturists, this company has decided to export no more guano for several years and to insure continuance of revenue to the government, formerly derived from exports, domestic prices were increased in May of this year.

Owing to a threatened shortage of guano in Chile that government also has taken steps to regulate the industry and protect guano-producing birds. This condition was brought about by a marked increase in domestic consumption, which has increased 10-fold in 3 years. In order to conserve the supply the Chilean Government has cancelled all concessions for private exploitation of deposits and turned the industry over to a state monopoly, which is endeavoring to conserve and increase the deposits by protecting guano-producing birds. U. S. imports of guano '33 totalled 59,772 tons, valued at $1,118,268, the highest quantity in recent years. Approximately 33,700 tons originated in Peru. Inability of American importers to obtain normal quantities of Peruvian guano in '34 has resulted in a marked decline in imports of all types to only 6,613 tons, valued at $147,150, during the first 9 months of the year.

Customs and Tariffs

¶ Jap Menthol and Argentine Quebracho Cleared — Higher U. K. Duty on Superphosphate—

President Roosevelt on Dec. 18 directed that no action be taken on complaints under the provisions of Section 3 (e) of the N. I. R. A. with respect to menthol imported from Japan and Quebracho tanning extract imported from Argentina and Paraguay.

U. S. Court of Customs and Patent Appeals' decisions of a chemical nature in the past month included:

No. 3777.—U. S. vs. Buhring Water Purifying Co. Carbon filter blocks were assessed at 45% as articles of carbon. Importer protested that they were properly dutiable at 20% as non-enumerated manufactured articles. Protest is sustained.

Foreign Rulings

Importation of copper sulfate into Italy has been made subject to quota restrictions.

Great Britain has increased the duty on superphosphate from 10% ad valorem to an inclusive rate of 10s. per ton, or to 20% of the value of the goods, whichever is the greater.

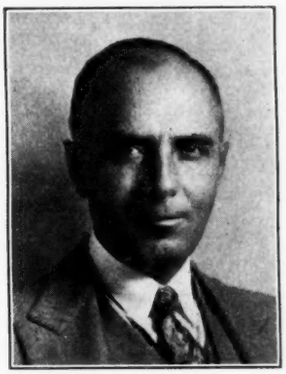
Attention! Exporters

"Preparing Shipments to British Countries," (Supt. of Documents, Washington, 20c) contains information valuable to chemical exporters shipping to all countries within the British Empire.

Companies

¶ Industry Nobly Responds to Call of Charity—Du Pont Buys Solvents' Interest in Krebs—Geigy & Innis, Speidin Buy Properties—

Once again the Chemical & Paints Division of the N. Y. Citizens Family Welfare Committee, with H. L. Derby, president, American Cyanamid & Chemical, as



H. L. DERBY

He and his aides bring cheer to New Yorkers in dire need.

chairman, has "topped" its quota, raising in the drive just completed $50,534.06 as compared with the quota set of $41,000. Asked to comment, Mr. Derby stated:

"I know I am expressing not only my own feelings but the sentiments of the Executive Committee when I thank most gratefully all who have worked and contributed to the outstanding success of the campaign." Mr. Derby was also chairman of the Chemical & Paints Division in the '33 drive when the quota was exceeded by several thousand dollars and consented to again head the '34 drive at the request of Myron C. Taylor, general chairman.

Du Pont Sole Kreb Owner

Du Pont has purchased for $7,420,000 Commercial Solvent's 30% interest in Krebs Pigment & Color, giving it complete ownership. Sale will give Solvents a large cash surplus which may be used either for expansion in other chemical fields or to increase the distribution to stockholders. The company closed '33 with $1,646,642 in cash.

Sale is understood to have been made on the basis of around 10 times earnings, indicating that Commercial's equity in profits in the Krebs company this year was around $750,000. Solvents entered the pigment business in August, '30, with establishment of Commercial Pigments Corp. At the end of 1930 Commercial Pigments properties were carried on the books at approximately $1,200,000, and about $600,000 or $700,000 was spent on plant additions indicating a cost to Commercial Solvents for the business of around $2,000,000. The Pigment Co. was merged with the Krebs a few years ago.

Buy New Properties

The Geigy Co. has purchased the industrial plant formerly occupied by the Duryea Manufacturing Co., Bayonne, N. J., from the Bayonne Trust Co., for all cash. Purchase is part of an expansion plan which has been contemplated by the Geigy Co. for several years. This will give this well-known dye factor manufacturing facilities in this country.

In line with its policy of progressive development, Innis, Speiden, manufacturers and importers of industrial chemicals, has recently brought a modern factory building in Jersey City. This 4-story, fire-proof building is located at the intersection of Henderson and 8th sts., approximately 900 it. from the entrance to the Holland Tunnel. It is close to the Pennsylvania, the D. L. & W. and Erie freight yards, and only 4 blocks from the Inland Marine Terminal.

Building will be used for manufacturing storage and as one of the convenient distributing points for the East.

And Briefly Summarized

Donahue & Coe, Inc., N. Y. City, is appointed by the Hercules Powder Co., Wilmington, Del., maker of explosives and chemical products, to handle its advertising and also the advertising of its subsidiary, the Paper Maker's Chemical Corporation, Kalamazoo, Mich.

Charles L. Huisking & Co. is celebrating completion of 25 years of business. To commemorate the event Mr. Huisking gave a luncheon on Dec. 29 to his associates and friends at the Drug and Chemical Club.

Great Western Electro-Chemical is offering free a chemical dosage chart to waterworks engineers. Copies are available either from the company or by writing this publication.

Western Machinery, Wichita, Kan., is holding a display of thousands of items carried in its industrial laboratory supply dept. Visitors are welcome.

Riverside Mining, 5 Elm st., Springfield, Mass., is organized to operate quartz and feldspar properties. Wallace M. Ripley is president.

New England Chemical Industries, a subsidiary of Consolidated Chemical Industries (with headquarters in California) will shortly open a modern glue factory at Woburn, Mass.

Lindsay Light has changed the company's name to Lindsay Light & Chemical Co., pointing out that the company's business is now approximately 80% chemical.

Litigation

¶ It Is the Particular Dye that Counts—Hudson & Massman Lose to Texas Gulf—

U. S. Court of Customs and Patent Appeals lays down principle in a case involving American Aniline Products that allowance for profit in determining selling price of an imported dyestuff must be computed on evidence of profits made in handling that particular dye, not on average profits for the entire dyestuff industry.

George P. Hudson and Abraham E. Massman are denied a Supreme Court review of their suit in N. Y. City Federal courts to set aside the contract by which extensive sulfur holdings in Texas were sold to Texas Gulf Sulphur in '18.

Their suit was based on the contention that while they got but $126,500 for the land, Joseph Snyder, a partner with them, received $260,000, chiefly for putting the deal through. Snyder later was to obtain a position with the company also.

Second District of N. Y. Federal Court refused to set the transaction aside. Second Circuit Court affirmed this ruling.

Metals

One metal cartel (zinc) appears about ready to "fold up" and another (tin) sets '35 quotas 4% below current production. If the Zinc Cartel comes to an end Jan. 1, as freely prophesied in Paris, another attempt to control prices and production of an important commodity in world-wide markets will have bogged down in the face of economic nationalism. Actual rupture is due to the planned withdrawal of Australian and German producers, it is reliably reported. Monthly production statistics will be continued. Cartel was formed at Ostend in July, '31, with 15 producing countries members, and with production restricted to 55% of capacity. The U. S. never joined the group. In August, '32 production was reduced to 45% and stocks fell and the London market price rose. Early this year at the insistence of the Germans the activity rate was raised to 60%. This, it is reported, has led to a number of difficulties that seem at the moment, at least, insurmountable.

While the plight of the zinc cartel is desperate, the International Tin Cartel appears to be operating smoothly. Production is set in Paris meeting at 40% of '29 tonnage, a reduction of 4% caused by less buying in the U. S. and Germany. A comparatively stable market in tin (between 50 and 56c) has been maintained for the past 10 months and world stocks are appreciably reduced. Quota for the 2nd quarter will be set at the Hague in February.

Heavy Chemicals

¶ A Very Satisfactory Contract Season Closes—Red Prussiate Weak—Southern Alkali Ships by Steamer to Eastern Ports—

With the '34 contract season practically closed, producers of industrial chemicals are generally satisfied with the results. Price stability has been maintained (except in a few isolated instances) and the outlook for increased tonnage consumption in '35 is bright. Diligent inquiring among both producers and consumers indicates that nearly all of the contract business is now closed; the usual stragglers are present, but their effect is of little weight when such an overwhelming proportion of the total has been definitely closed.

December tonnages followed the usual downward trend. Slackening in the heavy manufacturing lines and the usual desire to close out the year with small inventories led buyers to specify smaller shipments when ordering. Last year the fear of inflation had just the opposite effect and December tonnages were unusually large.

December price changes were relatively few. Antimony metal stocks are becoming scarce, the price is sharply higher, and an unconfirmed report states that material is being accumulated in London in large quantities. Whether the same group which has been so active in the shellac market was centering its speculative attention on antimony could not be learned.

Rather unexpected in most quarters was the 4c decline in red prussiate of potash. A competitive situation developed suddenly and the market at this writing is quoted at 35-38½c. No change in yellow material has been made.

Two important plating chemicals are higher. A new chromic acid schedule advances this item ½c and nickel salt is quoted 1c higher. The former has been out of line with bichromate prices for a long period and the readjustment was not unexpected. A slight upward revision was made in sodium cyanide in quantities less than 500 lbs.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Acid chromic	$0.13¾	$0.13½
Antimony, metal	.14½	.10
Oxide	.10¼	.09¼
Copper oxide, red	.15	.14

DECLINED

Potassium prussiate, red	$0.35	$0.39
Strontium nitrate	.08¾	.09½

DEPT. OF LABOR STATISTICS

	Nov.'34	Oct.'34	Nov.'33
Employment *a*	104.4	106.5	104.0
Payrolls *a*	90.7	92.4	85.1
Prices *b*	80.9	81.1	79.2

a 1923-'25 = 100.0; *b* 1926 = 100.0.

Methanol Statistics

Production of statistics of crude and synthetic methanol, compiled from data received by the Bureau of the Census and the Hardwood Distillation Industry Code Authority from 36 manufacturers, are presented in the table below. These statistics represent practically the entire output of crude and synthetic methanol in the U. S. Manufacturers included in the Bureau's summary on methanol for December, '33, accounted for 78.8% of the crude and 100% of the synthetic shown below.

Month 1934	Production (Gallons) Crude[1]	Synthetic
January	360,822	979,686
February	337,983	690,961
March	366,052	916,872
April	342,307	754,980
May	324,063	897,294
June	298,165	922,551
July	256,136	939,439
August	253,612	951,834
September	260,402	1,079,910
October	297,759	1,309,086
Total (10 months)	3,097,301	9,442,613

[1] The refined equivalent would be approximately 82 per cent. of the crude production.

Alkalies by Sea

An epoch in the 50 years of American alkali industry was reached Dec. 14 when the *S. S. Dorothy* swung from the docks of Southern Alkali at Corpus Christi and headed for the open sea, the first time American alkalies ever had been loaded directly at the plant of manufacture into hold of an ocean-going vessel.

Solvents

Continued unsteadiness in the petroleum field failed to have any appreciable effect on the petroleum solvents, the price structure except in one or two isolated tank-wagon quotations carried over from November without change. Demand, naturally, slumped somewhat in the closing month of the year, but an immediate pick-up is expected from the lacquer and rubber manufacturing centers very early in January.

Consumption of alcohol for anti-freeze purposes improved in December with the advent of colder weather in various sections of the country. Prices are competitive, however, but further increases in demand would undoubtedly correct this situation to an appreciable extent.

Other solvents, butyl alcohol, ethyl acetate, etc., are steady in price. The normal seasonal slump in consumption is about ended, and, indeed, a modest improvement has already taken place. Activity in the automotive centers on new models has already begun in earnest and lacquer shipments will expand shortly.

Solvent Data Sheets

Du Pont's R. & H. Chemicals' Dept. has just issued a data sheet on beta-trichlorethane, a new non-inflammable solvent; also similar information on hexachlorethane. Copies are available by writing the company at Wilmington or any branch office.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
None.		

DECLINED

None.

DEPT. OF LABOR STATISTICS

	Nov.'34	Oct.'34	Nov.'33
Petroleum:			
Ref. employ. *a*	111.9	112.9	110.0
Ref. payrolls *a*	96.8	97.9	89.8
Products, prices *b*	50.5	50.4	51.6

a 1923-'25 = 100.0; *b* 1926 = 100.0.

Chemical Specialties

¶ Awards in Technical Packaging Development — Pyrethrum Imports — Employing the Radio Profitably—

A new series of awards to honor outstanding achievements in new and redesigned packages during the past year and also a new series of awards for distinctive merit in technical packaging development, will supplement the established Irwin D. Wolf Award, the American Management Association announces in elaborating on plans for the annual Packaging Exposition to be held this year in Chicago's Palmer House, Mar. 5-8. Administration offices of the A.M.A. Packaging Awards are at 232 Madison ave., N. Y. City.

New design awards, to be known as Awards for Distinctive Merit in Packaging Design will replace the "Honorary Awards" of competition in previous years and will accord greater recognition to the outstanding package of the year in each major packaging division.

Fifteen classes of packages distinguished in the contest are metal containers, glass containers, molded plastic containers, wood containers, tubes, visible display packages, paper bags and envelopes, set-up boxes, folding cartons, canisters, family of packages, display containers, packages displaying merchandising ingenuity regardless of adaptation of art, shipping containers, and miscellaneous containers.

Decision to establish a competition known as Awards for Distinctive Merit in Technical Packaging Development—was based on the belief that accomplishment in technical phases of packaging was deserving of recognition equally with accomplishment in merchandising-design phases.

Advanced Sanitation Ideas

Pyrethrum and derris root imports are holding up well, former increasing 10% in quantity and 68% in value in the first 9 months of '34 over the previous corresponding period of last year.

Pyrethrum, or insect flower, imports during the first 3 quarters of '34 totalled 7,196,600 lbs. ($1,410,400), against 6,530,500 lbs. ($849,730), for the first 9 months of '33. Pyrethrum imports into this country originate almost entirely from Japan and account for approximately 90% of the total production there. Smaller quantities are obtained in Yugoslavia, Italy and Soviet Russia.

Imports of derris or tuba root declined somewhat in quantity from 575,785 lbs. during the first 3 quarters of '33 to 425,800 for the 9-month period of the current year, but value increased from $52,300 to $66,580. British Malaya is the chief source of this raw material, with smaller quantities coming from British India, the United Kingdom, and elsewhere.

Another classification of roots used in the manufacture of insecticides and classified in import entries as cobe, barbasco, and timbo amounted to 273,311 lbs., valued at $21,576, during the first 7 months of '34. These materials came from Peru, Brazil and Surinam.

All these materials are used in the manufacture of fly sprays, roach powders, and other household and agricultural insecticides. U. S., with its advanced ideas of sanitation, is the world's largest consumer of these materials but a considerable amount after being processed is exported as finished insecticides or concentrated extracts. Exports of such finished products during the first 9 months of '34 totalled 3,121,360 lbs., valued at $917,850, compared with 2,567,600 lbs., valued at $876,000 in the corresponding period of '34, statistics show.

"Tri-Clene", New Cleaning Fluid

A new cleaning fluid entirely different in its composition and effect has been placed on the market by du Pont.

Tri-Clene, which is the name adopted for the product, is a heavy colorless noninflammable liquid. Although highly volatile, its vapor does not form a combustible mixture when combined with air, so presents no fire hazard. One of its chief advantages is its perfect evaporation. Although it has a pleasant pungent odor when used, the odor disappears completely during evaporation.

Must Pay a Share

Agricultural insecticide and fungicide producers must pay a share towards the cost of the code even though the bulk of their sales may be of products not in this classification. Those whose total sales under this code are under $2,500 annually and which net sales are less than 10% of such company's total net sales, may still be exempted from sharing in the approved budget of $25,000. Contribution basis is one-tenth of 1% on actual net sales.

How to Use the Radio

A new departure in cultivating popular interest in scientific matters was inaugurated several months ago through the medium of radio. It is based on the premise that the average person, and more particularly the housewife, is interested in knowing the whys and wherefores of the many operations performed daily in the home, and in learning new and more efficient methods based on sound scientific principles.

Under the title "Science in Your Home" a program is being presented every weekday afternoon at 4:30 over Station WOR. It is under the direction of Foster D. Snell, Inc., consulting chemists of Brooklyn, and Dr. Kurt W. Haeseler of that firm is the speaker, with occasional guest speakers.

Program consists chiefly of talks either on products used in the home or on operations carried out in the home. To illustrate, the ever-present problem of dish washing has been discussed as a scientific process. There have been discussions of the nature and applicability of various types of polishes and cleaners. Or again, there have been explanations of how candles burn, why fruit stains should be removed while fresh, how to care for books, and of ways to use to advantage common household chemicals such as baking soda or salt. Dr. Haeseler also answers specific questions from listeners and gives constructive suggestions for solving individual problems, which have ranged from removing ink stains from a silk dress to refinishing the living room ceiling.

New Products

"Dwin*Maid" is a new water softener recently put out on the market by Baldwin Laboratories, Saegertown, Pa.

Bayer-Semesan is marketing a new and improved "Ceresan"-product for treatment of seeds.

Heard Here and There

To help retailers get full prices for their merchandise and thus assure them a legitimate profit, Colgate-Palmolive-Peet is now printing the price of the product on all newly designed cartons of Colgate and Palmolive products.

Several hundred thousand 4-ounce samples of Oakite are being distributed in a promotion centering in Chicago where the sudless cleaner is subject to a sustained drive by Oakite Products, Inc.

Colgate-Palmolive-Peet has lately been running a number of tests on a new box for "Super Suds," utilizing the toy cut-out plan of making the package more attractive and useful.

Fels-Naptha distributed to employes a Christmas bonus representing from 12% to 25% of their yearly earnings.

Bass-Luckoff, Detroit advertising agency, is handling the Edgar A. Murray Co.'s account. Company makes "Doom" a household insecticide.

B. T. Babbitt, Inc., names Fred. W. Stecker, Jr., Chicago district sales manager on "Bab-O".

Tremco Manufacturing is adding a soap department at Cleveland.

Felton Chemical now has a Philadelphia office at 200 S. 12 st.

Franklin Research, Philadelphia, maker

Du Pont is proving once again with a big jump in the sale of "Zerone" Anti-freeze, that a suitable tradename and a properly designed container are tremendous aids to sales increases, particularly in highly competitive fields. Right, B. T. Babbitt's "Bab-O" will be promoted through the use of a new and ingenious floor display, designed and produced by Robert Gair, Inc.

Carter-Thomson, of that city.

Goodrich-Gamble, St. Paul insecticide maker, is reported doubling capacity.

Cyrus Ward Co., Ltd., N. Y. City, large factors in rotenone, is represented by Clifton L. Turner in Miami. A non-poisonous insecticide "Cyrotone" is being marketed.

New in the Field

Marvelene Co., Grand Rapids, to make soaps.

American Chemical Products, Des Moines, to manufacture soaps, disinfectants, fly-spray, etc. Company is a subsidiary of F. W. Fitch Co.

Becker Soap, Cynthiana, Ind., to make soap powders, etc.

Schamber Chemical, chartered in Buffalo, will make soap products and specialty chemicals.

The Right Package Size

"Choosing the Right Package Size" is a very instructive article for specialty manufacturers appearing in December issue of *Printers' Ink*. C. B. Larrabee is the author and he deals with the 10 factors that govern size; 5 that govern the impression of size.

Container Co. News

Harry F. LePan for many years assistant sales manager, Wilson & Bennett Mfg. Co., is advanced to the position of sales manager of the Western Division with headquarters at the main office and factory in Chicago. Wilson & Bennett manufacture pails, drums, containers of various types.

Directors of Continental Can elect Norton Conway a director to fill the vacancy caused by the resignation of Matthew C. Brush.

Continental Can distributed over $200,000 in bonuses to employees on Dec. 24.

Soap

¶ Three Soap "Giants" Fight for Control—P. & G.'s Greatest Volume — "Soapers" in New Positions—

The 3-cornered fight for control of the granulated household soap business is being fought out in South Bend, Ind., where Colgate-Palmolive-Peet and P. & G. are seeking to enjoin Lever Bros. from making Rinso, an alleged imitation of Super-Suds, by methods which, they charge, infringe patent processes originated by Colgate and now owned jointly by Colgate-Palmolive-Peet and P. & G. Countering, Lever Bros. have filed suit against P. & G. in the Federal court for the eastern district of N. Y., charging that Oxydol is being produced only by infringing patents used in the Rinso process. That the market is a rich one and worth fighting for is seen from figures released by Lever Bros. showing that in 1930 108,205,000 lbs. of Rinso alone were sold with a value of $13,451,000. The 3 giants have assembled internationally known attorneys for the fight. Newton D. Baker, former Secretary of War, heads the Colgate forces, while Horatio Ballantyne, sent from the parent company in England, leads the Lever defense and counter-attack on the N. Y. flank. Trial judge on Nov. 15 instructed the plaintiffs in the $1,000,000 action at South Bend to file briefs within 90 days. A decision is not expected for at least 6 months.

Profits—Soap Leaders—"Dreft"

P. & G.'s volume of business for year ending Dec. 1 is reported best for any 12 months in company's almost century-old history. Profits did not keep pace with volume, however. Profit in cottonseed oil inventories are said to be large.

Lever Bros.' "Lifebuoy" leads hard milled field with Colgate-Palmolive-Peet's "Palmolive" and P. & G.'s "Camay" about tied for 2nd place. Lever Bros.' "Lux" is said to be 4th.

P. & G. is pushing household sales of Dreft, the new soapless soap in various parts of the country. Special emphasis is being made in New Haven, Kokomo, Ind., and Minneapolis.

DEPT. OF LABOR STATISTICS

	Nov.'34	Oct.'34	Nov. '33
Employment *a*	104.6	105.7	97.7
Payrolls *a*	92.5	94.6	80.1

a 1923-'25 = 100.0.

Personnel Changes

S. M. Kurrie, Armour Soap's assistant sales manager, is now in charge of Washington, D. C., territory.

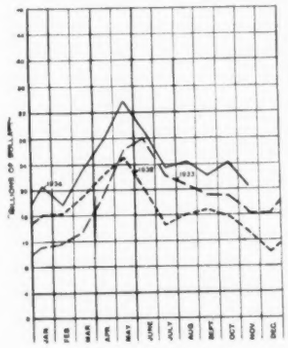
Ralph D. Ferguson is promoted to sales managership by T. B. Robertson Products, Chicago.

A. Joseph Ferolie is now N. Y. City representative for J. T. Robertson Co., Syracuse soap manufacturer. He was previously with Joal Sales, Palmolive and before that with Kirkman.

Paints, Lacquers and Varnish

¶ Paint Sales Decline Seasonally in November—Contract Prices Renewed on Most Raw Materials —Favorable Spring Outlook— NRA Reviews Industry—

Statistics on sales of paint, varnish and lacquer products, based on data reported to the Bureau of the Census by 586 identical establishments show that November sales declined from October ($20,299,967 from $24,206,064) but were considerably better than November '33 figure of $16,234,234. Industrial sales in November '34 totaled $5,207,599 as against $5,814,069 in October '34 and $4,656,353 in November '33. Trade sales reached $8,016,041 in November '34, compared with $9,568,364 in October and $6,566,157 in November a year ago.



Paint sales trend.

Raw Materials in '35

Subject to quarterly adjustment most chemical dry colors are being quoted under contract at unchanged levels. Iron blues are one exception, an upward revision bringing the contract figure to 36½c. Red lead and litharge are fractionally higher, due to a better lead market. Casein was advanced ¼c. Importers of Spanish red oxides offered contracts at existing price levels and a major portion of this business is said to have been closed as the year ended. The same is also true of French ochres, siennas and other earth colors.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Blues	$0.36½	$0.35½
Casein, dom.	.09½	.09¼
Litharge	.052	.05
Red lead	.062	.06

DEPT. OF LABOR STATISTICS

	Nov.'34	Oct.'34	Nov.'33
Employment *a*	99.7	99.6	91.1
Payroll *a*	78.5	78.1	68.3
Prices *b*	78.8	79.4	76.3

a 1923-'25 = 100.0; *b* 1926 = 100.0.

Trading in raw paint materials was exceptionally slow in December. November building statistics were certainly not encouraging, being below October and November of '33. Many of the more conservative executives in the paint field voiced the opinion several months ago that little improvement in the demand for paints because of the activity of the Government's modernization plans would become apparent until after the first of the year and subsequent events have indicated clearly how correct they were. There has been improvement, of course, but not to the degree first expected. However, reports from various centers of the country show that modernization plans are rapidly coming to the front and the consumption of paint in the first 6 months of '35 is expected to show a substantial increase even over the corresponding '34 figures.

Efforts of the F. H. A. toward revival of the durable goods industries through

a gigantic home modernization program resulted in a 62% gain in alteration and repair work during November, compared with the same month of '33, according to reports. This favorable gain compares with increases of 50, 27 and 18%, respectively, for October, September and August.

Modernization and repairs during November had an aggregate value of $13,071,000, against $8,110,000 for the same month last year. Figures from which these estimates were taken represented reports of building permits issued in 772 cities.

Reports of construction activities for the past 6 months are not encouraging. According to the F. W. Dodge Corp., residential building contracts awarded in 37 eastern states showed 5,320,000 sq. ft. of floor space for November, '34, as compared with 6,430,000 in '33, and 5,450,000 in '32. For the 6 months, June-November in '34, the average monthly residential building contracts awarded were 5,870,000 sq. ft. of floor space as compared with 7,370,000 in '33, and 5,970,000 in '32. Non-residential building contracts awarded for the June-November period in '34 showed an average of 7,700,000 sq. ft. as compared with 6,800,000 sq. ft. in '33. When one compares these figures with the monthly averages in the years 1925 to 1929, which ran over 40 million sq. ft., it is possible to calculate what a long way we have to go. Outlook for '35 appears to be more optimistic. Actual building costs, however, have mounted so rapidly in the last 18 months that it makes a substantial increase problematic.

Best Year Since '30

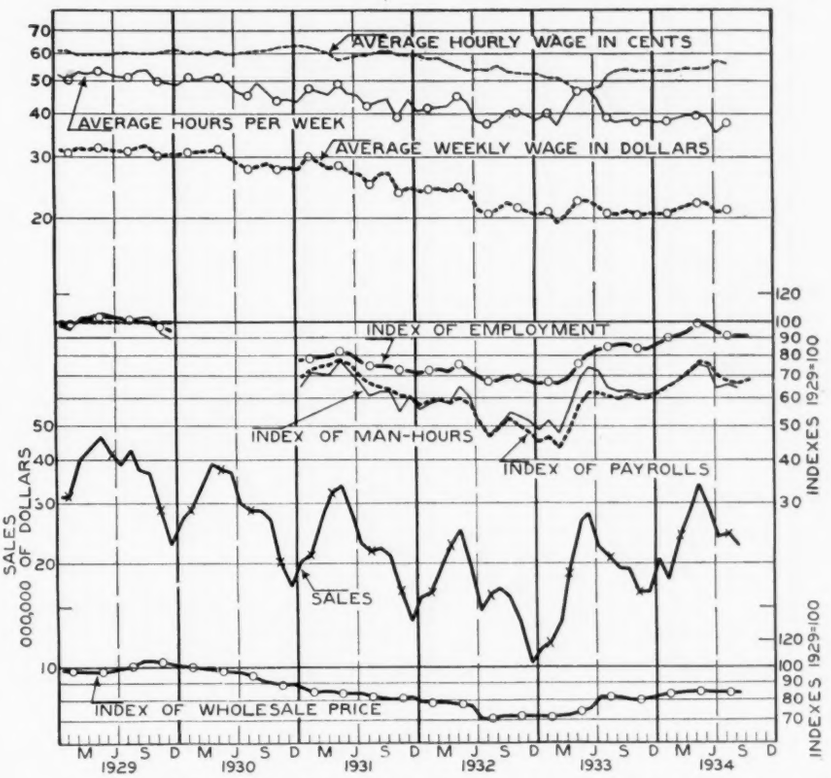
During '34 the paint, varnish, and lacquer manufacturing industry enjoyed greater prosperity than in any year since '30, according to a recent survey made by NRA's statistical division and published in the Dec. 17th issue of *The Blue Eagle*. Though total pay rolls and sales are approximately at the '31 level, number of wage earners employed exceeds the figure for any year since '29. Moreover, in view of the 20% decline in the cost of living, laborers in this industry are enjoying a purchasing power roughly 25% above the level of '31 and only 10% below that of '29. Hourly wage rates and average weekly wages have been comparatively constant.

Scanning the chart in detail, we find in the upper section 3 curves based on data obtained for the most part through the courtesy of the Bureau of Labor Statistics. In the case of employment and pay rolls adjusted to the '33 census totals by NRA, the figures before the year '32, however, were obtained after some minor adjustments to assure continuity from the National Industrial Conference Board. Curve of average hourly wages reached its low point in June of '33. In the 3rd quarter of '33, at the time of the passage of N. I. R. A., the curve shows a distinct jump. At present average hourly wages are only about 5c below the figure for '29. Curve of average hours worked per week, on the other hand, shows a distinct rise in the spring of '33, rising from about 37 in March to 47 in June. In the 3rd quarter of that year number of hours dropped to 38 per week. It is noteworthy that the increase in production in the spring of '34 was not accompanied by an increase in the average hours worked per week, but by an increase in employment.

Average weekly wages have not shown a very substantial increase since '33. Average weekly wage is now 28% below the 1929 level or about $20.50, but it must be remembered that this represents an average purchasing power of employed workers which is only about 8% lower than in '29.

Accompanying the increase in sales which began in March of '33, total pay rolls increased more rapidly than employment until about June of that year, since which time the movement of the 2 curves has been parallel. Slightly greater spread in the latter half of '33 as compared with the following period indicates a small increase in average weekly wages.

Sales series was constructed from data reported to the Bureau of the Census, and published in the Survey of Current Business. It covers the dollar volume of 639 identical establishments. It is a combination of the sales, on the one hand, of paint, varnish, and lacquer by 586 identical firms, estimated to represent 80% of the total sales of such products in the industry, and on the other hand, of plastic paints, cold-water paints, and calcimine by 53 identical concerns estimated to represent about 85% of the total. Total sales for the first 9 months of '34 were about 16% higher than in the corresponding period of '33 and over 2% higher than in the same months in '32. In September of this year the dollar volume of sales, though still 40% below that of '29, was higher than for any September since '30. Inasmuch as paint, varnish, and lacquer prices are 15% lower than in '29 comparison in terms of physical volume is considerably less unfavorable, showing only a 25% decline.



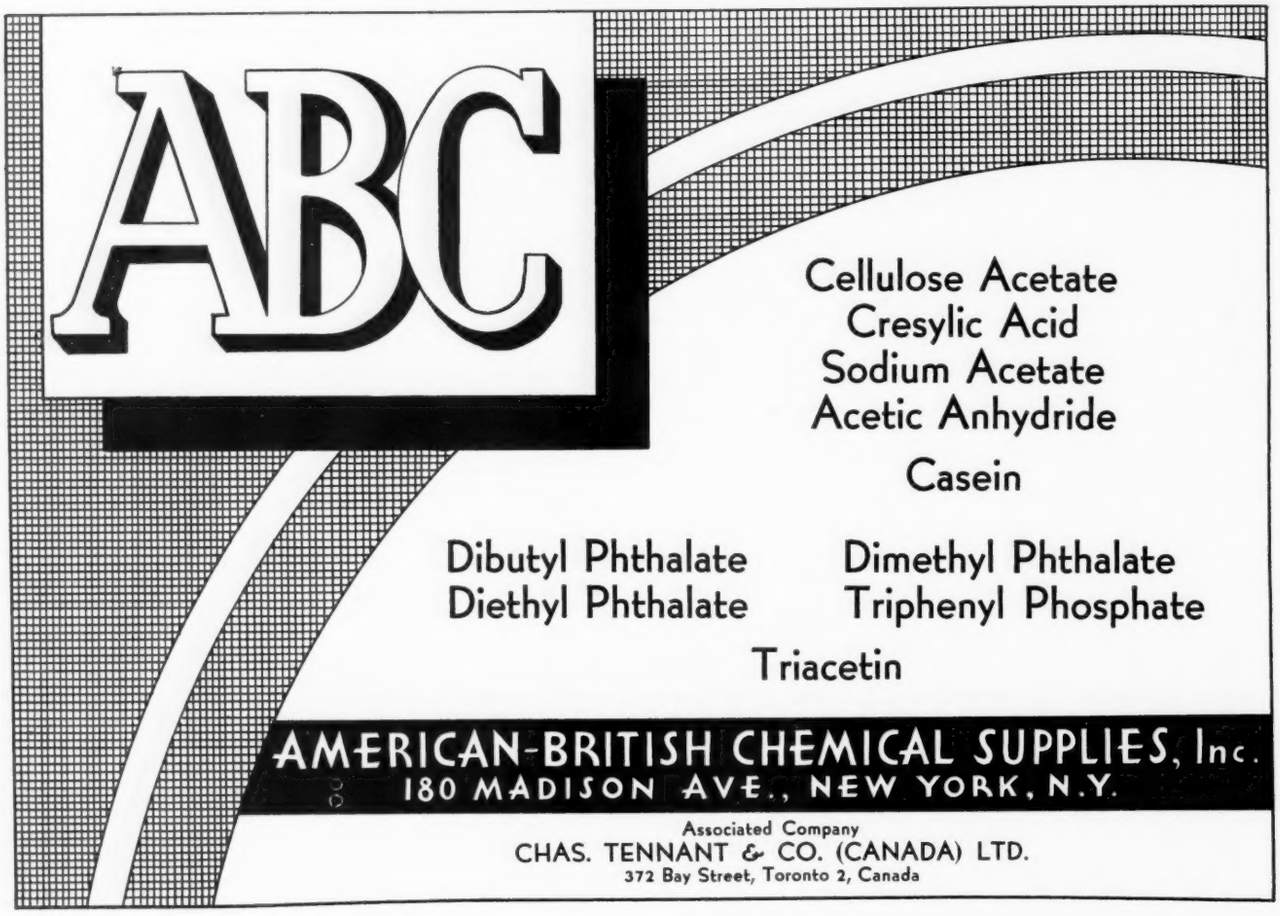
NRA's Planning Division charts paint industry's path since '29.

Wholesale Prices

Combined index of wholesale prices of 23 paint materials and 6 prepared paints as compiled by the Bureau of Labor Statistics is shown at the bottom of the chart. Index fell steadily from '29 until July, '32, when it reached the depression low of 30% below '29. Substantial recovery began to occur in the spring of '33, continuing into '34. In recent months prices have been moving sidewise at a level still 16% below that of 1929.

Still 1/3 Below '29

Notwithstanding the substantial gains already made, the paint, varnish, and lacquer manufacturing industry is still operating (judging by man-hours) at a rate about one-third below the '29 average.



CITRIC ACID
TARTARIC ACID

CHAS. PFIZER & CO., Inc.

MANUFACTURING CHEMISTS

Established 1849

81 Maiden Lane
NEW YORK, N. Y.

444 W. Grand Avenue
CHICAGO, ILL.

Valuable Lacquer Booklet

An informative 44-page booklet published by The Zapon Co., Stamford, Conn., reveals a great deal of information on the nature and practical uses of pyroxylin lacquers for finishing metal, wood, composition, glass and various types of surfaces. It lists a complete line of finishing materials and tells how to use them effectively and economically.

Paint "Newsflashes"

NBC network is used to broadcast the story of the paint and varnish industry, Dec. 6, from 8 to 8.30 P. M., the first in a series on the leading American industries.

Production of paints, varnishes and related products last year had a value of $284,485,764 against $362,064,011 in '31, according to figures just compiled by the U. S. Census Bureau.

Signs indicate that the modernization program of the Government is at last reaching the point of practical application.

National Wholesale Paint Association will hold its 21st annual convention at the Commodore, N. Y. City, Feb. 18 to 20.

Paint Personnel

Ray J. Hauk, who at various times has been with Devoe & Raynolds, as superintendent of the Newark works, with National Lead, with Resinous Products & Chemical, is now a Beck, Koller technical representative.

C. Homer Flynn has joined the staff of the National, Paint, Varnish and Lacquer Association as director of the industrial sales division.

S. A. Stephens, formerly head of Nu-Enamel Distributing Co. of Illinois, is made director of sales and advertising of Nu-Enamel Corp., Chicago. Frank Pitts, vice-president, is now head of factory operations in Europe and Asia, with headquarters in England. He succeeds Harry V. Donaldson, who has returned to the U. S. to serve as assistant sales manager.

In "The Open Door"

December issue of *The Open Door*, official monthly bulletin of the N. P. V. and L. A., Inc., which has been mailed to the members of the Association, carries an almost complete list of the standing committees of the Association for '35. The few omissions will be included in a supplementary list which will be published in the near future. New members are listed, which brings the roster of A, B and D members of the Association up to 805. A message from President Ernest T. Trigg on the editorial page forecasts a brilliant opportunity for the growth of the paint industry in '35. The front page cover is occupied by a message from Wallace F. Bennett, vice-president, which emphasizes the service of the Association to its members. Issue also contains valuable statistical data, and late information on the administration of the National Housing Act by the F. H. A., as related in the paint industry's opportunity to make increased sales.

New Local Officers

Several of the local paint, varnish and lacquer associations and production clubs have held elections in the past 60 days. CHEMICAL INDUSTRIES presents the names in tabular form for ready reference.

Linseed Oil

¶ Linseed Lower Despite High Flaxseed Prices and Unfavorable Crop Reports—

Linseed oil prices were off slightly at the end of December from the November close. A much lessened demand was noted as the end of the year approached. Boiled in tanks was quoted at $0.085 as against $0.087, and raw at $0.081 against $0.083.

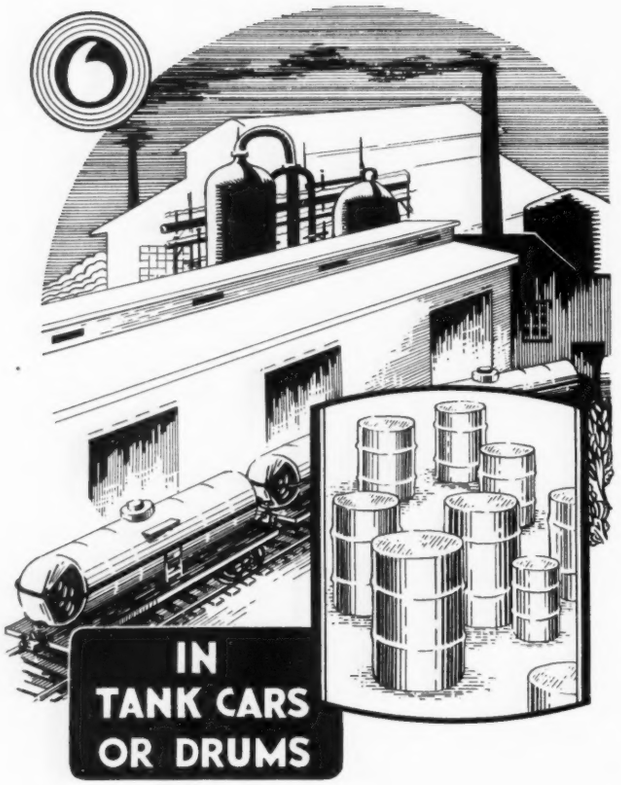
The Argentine Government on Dec. 19 reported that production in that country for the present season totalled 71,650,000 bu. This is somewhat less than had been expected. On the day previous the final U. S. flaxseed crop report totalled 5,230,000 bu. Acreage harvested was reported as 974,000; the yield 5.4 bu. per acre, compared with 5.3 in '33, and 5.7 in '32. Compared with November close, flaxseed prices closed out the year with a gain.

Details of the U. S. Agricultural Dept's. final estimate reveal the fact that, of the 5,253,000 bu. produced this year, 3,480,000 came from Minnesota, 938,000 from North Dakota, 242,000 from California, and only 42,000 from South Dakota and 76,000 from Montana. Total farm value of this year's flax crop is given at $8,570,000.00 as compared with $10,538,000.00 in '33 and $9,897,000.00 in '32. Final acreage of 974,000 compares unfavorably with 1,328,000 in '33 and 1,975,000 in '32.

The Tannin Corp., Wilmington, Del., and International Products Corp., Staten Island, N. Y., are the agents for the newly formed Argentine quebracho pool.

New Local Paint Association Officers

Association	President	Business Connection	Treasurer	Business Connection	Secretary	Business Connection
Baltimore Prod. Club	George Sutherland	H. C. Davis Paint	A. A. Eisenburg	Southern Lacquer	Same as treasurer	
Paint, Oil & Lacquer Club of Col.	R. J. Foley	Sherwin-Williams, Denver	Harry A. Barton	Mountain & Plain Paint, Denver	George Hannigan	Minehart-Traylor Co., Denver
Chicago Paint & Varnish Prod. Club	Thomas E. O'Connor	Martin Varnish	R. E. Prince	James B. Day & Co.	Bryan Heusted	Brevolite Lacquer
Columbus Paint, Oil & Varnish Club	F. M. Barton	Am. Zinc Sales Co.	Ben Yenkin	Fry & Yenkin	Same as treasurer	
Cincinnati, Paint, Varnish & Lacquer Ass.	T. J. McConnell	John Kolbe Paint				
Detroit Paint, Varnish & Lacquer Ass.	Martin Peters	Donahue Varnish	J. Bond	Berry Bros.	R. Zeiss	Eagle-Picher Sales
Golden Gate Paint, Varnish & Lacquer Ass.	Walter J. Schlinger	duPont Co., San Francisco	H. S. Margetts	W. P. Fuller & Co.	Same as treasurer	
Indianapolis Paint, Varnish & Lacquer Ass.	P. D. King	Pittsburgh Plate Glass	H. E. Howe	American Can	Same as treasurer	
Louisville Paint, Varnish & Lacquer Ass.	Bodley Booker	Bridges Smith Co.	R. F. Schaefer	Schaefer Co.	Same as treasurer	
Memphis Paint, Varnish & Lacquer Ass.		De Soto Paint & Varnish	James Seabrook	Corlis-Seabrook Paint	W. Arrington	Harry C. Smith Co.
N. Y. Paint and Varnish Prod. Club	A. J. Cohn Col. G. W. House	C. A. Woolsey Paint & Color, Jersey City	J. Frederickson	John W. Masury Paint, Brooklyn	Same as treasurer	
Cincinnati-Dayton-Indianapolis Paint & Varnish Prod. Club	Frank Chinery	Eagle Picher Lead	Arthur Masse	Columbus, Ohio	Robert Smith	Indianapolis, Ind.
Philadelphia Paint, Varnish & Lacquer Ass.	Wm. H. Jardin, Jr.	McCloskey Varnish	Dr. F. S. Havens	Philadelphia	G. B. Hechel	Philadelphia
Philadelphia Paint & Varnish Prod. Club	G. P. Woodward	Gilbert Spruance Co.	W. R. Horick	Gilbert Spruance Co.	D. H. Parker	du Pont
Milwaukee Paint, Varnish & Lacquer Ass.	Miles W. Leep	Wm. F. Zummach Paint Co.	Elmer Dahlke	Phelan-Faust Paint Mfg. Co.	Same as treasurer	
Pittsburgh Paint, Varnish & Lacquer Ass.	S. V. Thompson	Thompson & Co.	H. V. Natcher	T. H. Nevin Co.	Geo. F. Shultz	Pittsburgh, Pa.
Los Angeles Paint, Varnish & Lacquer Ass.	H. C. McClellan	North American Paint & Chem. Co.	Dean Morgan	Sillers Paint & Varnish Co.	Same as treasurer	



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FLAKE	SOLID	LIQUID

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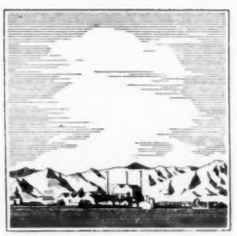
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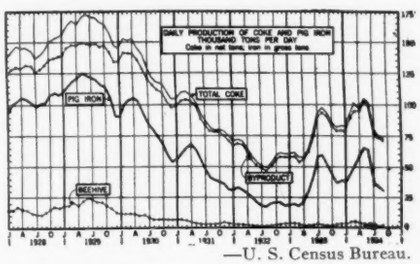
Coal Tar Chemicals

¶ Coking Operations Again Increase—Benzol Is Reduced 4c—Naphthalene Lowered — Review of World Dye Production—

A further small gain marked the production of coke in November. Output of both beehive and byproduct coke amounted to 2,361,562 tons, or 79,201 tons per working day. This represents an increase of 2.1% in comparison with the October rate of 77,548 tons, and is the highest rate recorded since June of this year.



—U. S. Census Bureau.

Output of byproduct coke for the month was 2,267,462 tons, or 75,582 tons per day. Compared with October the rate increased 1.1%. All of the increase occurred at merchant plants, where the daily average of 33,269 tons was 3.3% greater than that of the preceding month. In spite of a 4.0% increase in the average daily production of pig iron during November, operations at coke furnace plants declined 0.5%.

Beehive coke production continued to increase, the October rate of 3,619 tons per day being the highest since May, when 5,544 tons per day was reported. For 6 consecutive months, stocks at byproduct plants have risen, total on hand at the close of November—3,417,903 tons—being 10.9% in excess of October's reserves, and was higher than any month since December, 1932. Bulk of the October gain was at merchant plants.

Benzol, Naphthalene Lower

Coal tar chemical market was suddenly awakened out of the December doldrums with a 4c benzol reduction, the sharpest decline that has been made in this item in several years. The market in tanks is now based on a 15c figure. Naphthalene was competitive last month and finally a downward readjustment of the schedule became necessary. Creosote oil (several grades) is, on the other hand, at higher levels. A firm condition prevails in toluol, solvent naphtha and xylol. Immediate improvement in demand for solvents is expected early in January. The intermediates markets were quiet, the producers centering activity on the closing of '35 contracts at existing price levels. Coal tar dye sales were somewhat better than anticipated in the New England section. A period of good demand was expected in the Paterson area following the strike period and producers were not disappointed.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Creosote oil, No. 1	$0.11½	$0.11
No. 2	.10½	.10

DECLINED

Benzol	$0.15	$0.19
Naphthalene, dye	.04¼	.04¾
Balls, flake	.04½	.05½

Outstanding Dye Market Developments

World dye production since '29 has been featured by a marked increase in Japan, a smaller increase in Soviet Russia, and declines in all other principal producing countries. Supported by large and growing domestic textile industries, Japan's dye production, about 75% of which consists of low priced sulfur dyes, increased from 17,000,000 lbs. in '29 to 35,000,000 lbs. during '33, while Soviet Russia's output in the same period increased from 28,000,000 to 35,000,000 lbs.

Contrasted with these production gains the German output declined from 165,000,000 to 145,000,000 lbs. over this period; the U. S. from 111,000,000 to 101,000,000 lbs.; England from 56,000,000 to 53,000,000 lbs.; France from 37,000,000 to 24,000,000 lbs.; Switzerland from 24,000,000 to 20,000,000 lbs.; and Italy from 17,000,000 to 14,000,000.

Although the expended Russian production has had adverse effects upon the leading world dye exporters in lessening the export demand for their products in Russia, the effects of the Russian production is confined to the local market itself as little or no Russian dyes are exported.

Situation regarding Japan, however, is quite different, as Japanese producers are not only supplying the bulk of the domestic demand for dyes but are becoming important competitors in China and India. Both of these countries have large textile industries, and consequently are important dye exporters as neither produce any volume of dyes. Despite a notable contraction in world textile production from '29 to the beginning of '34, the world output of dyes decreased only about 5% during the period, declining from 450,000,000 to 427,000,000 lbs.

Coal Tar Products in '33

Value of U. S. coaltar products made for sale in '33 amounted to $106,262,925, at factory prices, an increase of more than 5%, compared with $100,531,630, reported for 1931, the last preceding census, according to a preliminary report of data collected by the Bureau of the Census for the Census of Manufactures for '34. More important items, which contributed to the total for '33 are as follows:—Crudes, $16,750,551; intermediates,$21,013,212; dyes, $45,556,835; medicinals, $5,980,332; phenolic resins, $7,508,587.

Statistics on the production of coaltar products, by kind and value, for '33 and '31, are given, figures for '33 being preliminary:

	1933	1931
Total value†	$106,262,925	$100,531,630
*Crudes	16,750,551	20,491,752
Intermediates	21,013,212	18,617,651
Finished products, total	68,499,162	61,422,227
Dyes	45,556,835	40,627,100
Color lakes	3,483,276	1,765,611
Medicinals	5,980,332	7,572,929
Flavors	1,974,674	1,957,348
Perfume materials	239,349	684,914
Phenolic resins	7,508,587	7,281,550
Other	3,756,109	1,532,775

* Does not include by-products crudes made in coke plants and gas works.

† Figures refer to production for sale and therefore do not include data for amounts made and consumed in the same establishments.

Fine Chemicals

¶ Market Is Featured by Good Demand and Stable Prices—

Fine chemicals were in excellent demand in December. Seasonal items, particularly, moved out in large quantities and the price structure continued firm. Glycerine markets are still characterized by exceptional firmness and, according to the general consensus of opinion, there is little likelihood of any change at least for the first quarter.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
None.		

DECLINED

Acid lactic, X, U.S.P. VIII	$0.45	$0.50
	.43	.48
Silver nitrate	.38	.38½

DEPT. OF LABOR STATISTICS
(Drugs & Pharmaceuticals)

	Nov.'34	Oct.'34	Nov.'33
Price a	73.5	73.5	58.4

a 1923-'25 = 100.0.

U.S.P. lactic acid was reduced 5c early in December; mercury is steadier than for some months past and this has strengthened the price structure of the mercurials; nitrate is off a ½c from the November close.

Metz Laboratories Sold

Winthrop Chemical has acquired H. A. Metz Laboratories.

At the Plants

Dow Chemical reports the completion of a new brine pond.

Colgate-Palmolive-Peet is planning on a half a million dollars expenditure at the Jersey City plant.

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Acetal
Acetamide
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and Formate
Crotonaldehyde
Crotonic Acid
Ethyl Crotonate
Iron Acetate
Methyl Acetate
Paraldehyde
Triacetin

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SPECIFICATIONS

Aluminum Acetate	19.5% to 20.8%
Al_2O_3	4.9% to 5.2%
Free Acid	½% maximum
pH	3.3 minimum
Chlorides	Negligible
Sulphates	Negligible
Color	Water white to pale yellow
Sp. G.	1.087 to 1.093 @ 20° C.
Weight	9.1 lbs. per gal. @ 20° C.

CONTAINERS

Non-returnable	Net Weight
10 gal. Kegs	90 lbs.
50 gal. Barrels	450 lbs.

There are no shipping restrictions

The waterproofing of textile products may be carried out with NIACET ALUMINUM ACETATE alone or in conjunction with wax emulsions. Laundries find better results are secured with less material in the waterproofing of fabrics against dampness, rain, perspiration, or accidental spillage when using Niacet aluminum acetate.

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Fertilizers

¶ Phosphate Rock Is Higher, But Superphosphate Advance Is Abandoned — Exports Show Further Increases—

The much-talked-of 50c rise in superphosphate failed to materialize as the year closed, producers finding it impossible to "sell" consumers the idea of an increase at this time. Rock prices, on the other hand, are higher with the advent of the new year. Contracts on superphosphate protect, however, for the first 6 months so that any change (except for spot purchases) is off indefinitely. Almost without exception, the organic ammoniates are higher. Exports of ammoniates have been exceptionally heavy and stocks are scarce. Talk still persists in the sulfate market about the possibility of a price rise, but instead of suggesting an immediate increase, those still bullish insist now that several weeks may elapse before such action is taken. Nitrate of soda market is quiet and unchanged at the bulk basis of $23.50, ports. The potash market remains dull with little business being placed.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Blood, dried, N. Y.	$2.75	$2.60
Chgo.	3.25	2.75
Imported	3.05	2.85
Nitrogenous material, imp.	2.65	2.60
Western	2.30	2.25
Phosphate Rock, all grades	15c per ton	
Tankage, N. Y.	2.65	2.50
Unground	2.40	2.25
Chgo.	2.50	2.10
Imported	3.00	2.75

DEPT. OF LABOR INDICES

	Nov.'34	Oct.'34	Nov.'33
Employment *a*	91.2	91.5	90.8
Payrolls *a*	69.7	73.5	63.0
Fert. mat. prices *b*	64.6	65.7	67.8
Mixed fert. *b*	73.5	73.0	68.5

a 1923-'25 = 100.0; *b* 1926 = 100.0.

Imports Down, Exports Up

Imports of fertilizer and fertilizer materials were 31% smaller in November this year than in November, '33, and 2% larger than in November, '32. November was the 6th consecutive month in which imports were smaller than in the corresponding month of last year. Exports of fertilizer and fertilizer materials were 0.4% larger than in November, '33, and 35% larger than in November, '32. Decrease in imports under last year was due in large part to the smaller amount of ammonium sulfate imported, declining from 30,254 tons in November of last year to 2,211 tons in November of this year. Other materials that showed substantial declines in the last year included sodium nitrate, superphosphate, kainite, and manure salts. There were increases over last year in imports of cyanamid, calcium nitrate, guano, other nitrogenous materials, sulfate of potash, and nitrate of potash. Nitrogenous materials as a group declined 26% from November of last year; total phosphate materials declined 73%; total potash materials declined 28%.

Gain in Nitrogenous Materials

Increase in exports of fertilizers and fertilizer materials over November of last year was due primarily to a large gain in the amount of nitrogenous materials exported. There was a decline in the exports of phosphate materials, due mainly to a sharp drop in the amount of high grade hard rock exported.

The Cost of Fertilizer

Fertilizer was the cheapest of all the major commodities that farmers buy, according to the 3rd quarter '34 price indexes of the U. S. Dept. of Agriculture. Standing at 105 Sept. 15, price of fertilizer was only 5% above the pre-war level. Index of all commodities bought by farmers stood at 126 on Sept. 15, or 26% above the pre-war price.

During the past 25 years, fertilizer prices have exceeded farm prices only 9 years and have exceeded the average price of all commodities bought by farmers only 4 years. A dollar's worth of farm products on an average during the past quarter century bought $1.03 worth of fertilizer.

Personal, Personnel

B. H. Brewster 3rd, vice-president, The Baugh & Sons Co., is recovering from an appendicitis operation.

Albert P. Axtell resigns as Chilean Nitrate sales manager and is succeeded by J. Albert Woods, formerly of Armour. Mr. Axtell at one time was in charge of du Pont's nitrate imports when that company was heavily interested in the Chilean fields.

G. D. Chamberlain, Gulf Fertilizer advertising manager, is president of the Tampa Advertising Club.

"Sunshine State" Potash

U. S. Potash has recently adopted a new trademark based upon an old Zia Indian design symbolizing the sun and is similar to the design used by the State of New Mexico on the State flag and on highway markers and license plates. Mines and refinery of United States Potash are located at Carlsbad, N. M., and the company appropriately calls its product "Sunshine State" Potash. Main offices at 342 Madison ave., N. Y. City.

Naval Stores

¶ We Lose Ground in Sales to Germany—Trading in Very Light Volume — Prices Show Little Change—

New German policy of shifting import business to countries with which it has a favorable balance of trade is resulting in marked declines in imports of American turpentine and rosin. Normally, Germany buys from 65 to 75% or more of her requirements of these products from the U. S., but since the middle of '34 percentage has declined rapidly as a result of the transfer of purchases to European countries.

During the first 10 months of '33 Germany purchased 39,800 metric tons of American gum rosin, or about 79% of its imports of this commodity from all countries. During the first 10 months of '34 imports of American rosin had declined to 30,236 tons, or only 49% of the total from all sources, according to a report from Consul Sydney B. Redecker, Frankfort-On-Main. Germany's imports of American turpentine during the first 10 months of '34 amounted to only 7,700 metric tons, or 40% of total imports from all sources, compared with 12,145 tons, or 65%, for the first 10 months of '33, according to the report.

November production of naval stores by steam distillation and solvent treatment of wood and stocks on hand Nov. 30, according to data collected by the producers' committee, through Arthur Langmeier, Hercules Powder secretary, were:—

PRODUCTION

	Rosin, 500-lb. barrels	Turpentine, 50-gal. barrels	Pine Oil gallons
Month of November	41,884	6,548	303,686
Total from April 1, 1934	337,057	54,264	2,386,562

STOCKS AT PLANTS

Total November 30, 1934	108,244	18,752	
March 31, 1934	89,963	19,253	
Change	+18,281	—501	

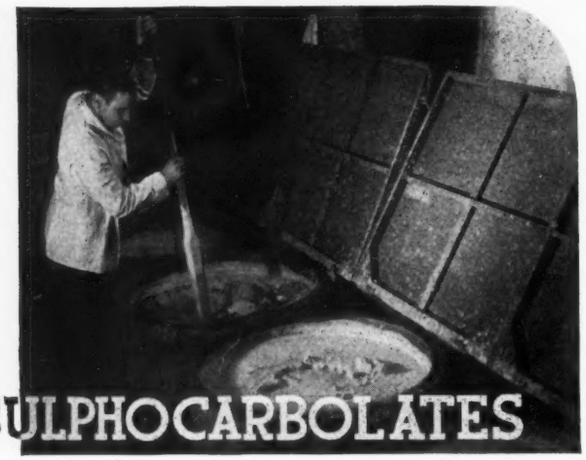
NOTE—Rosin production and stocks include all grades of wood rosin.

DEPT. OF LABOR INDICES
(All Naval Stores Groups)

	Nov.'34	Oct.'34	Nov.'33
Employment *a*	92.4	89.3	101.1
Payrolls *a*	47.9	45.1	45.3

a 1923-'25 = 100.0.

France profited most from this shift of business, increasing its rosin shipments to Germany 3-fold, from 4,497 metric tons during the first 10 months of '33 to 15,774 metric tons for the corresponding period of '34, while shipments of turpentine from France to the German market increased from 589 to 1,647 metric tons. Other countries obtaining a larger share



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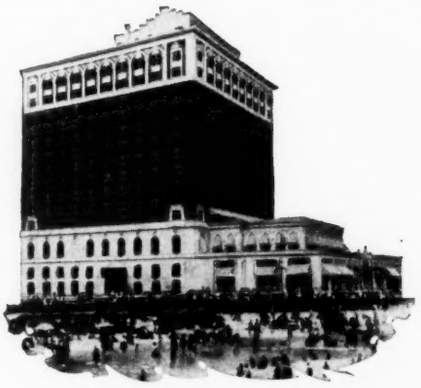

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of Germany's rosin import business were Portugal whose share increased from 2,045 to 6,643 metric tons; Spain from 3,337 to 4,997 metric tons; and Russia from an insignificant amount to 2,344 metric tons. Countries supplying larger quantities of turpentine to Germany were: Portugal, which increased shipments from 744 to 1,649 metric tons; Sweden, from 2,454 to 2,772 tons; Spain, from 447 to 1,515 tons; and Russia, from 518 to 1,546 tons.

Aside from directing its imports of naval stores to European countries Germany has been active of late in developing domestic production of rosin and turpentine, utilizing its large resources of pine forests and a labor battalion on the order of a conservation corps of civilians. First experiments are said to have been successful.

Little Better Than Normal

While it is safe to say that trading in the naval stores centers in December was more active than in the purely nominal markets which prevailed throughout November, the improvement was very slight indeed. Stocks continue to accumulate at the 3 primary ports and are much larger than they were at the close of 1933. Turpentine sold at 45c at Savannah on Dec. 28 with the market nominal at Jacksonville on the same day.

9 Months' Exports

While exports of naval stores increased slightly in value to $11,238,676 during the first 9 months of '34 compared with $10,805,500 in the corresponding period of '33, many items recorded losses in quantity. Gum rosin increased 2½% in value to $4,915,000 but declined 31% in quantity to 586,267 barrels. Wood rosin increased only slightly in quantity but value advanced 13% to $1,915,000. Gum spirits declined both in quantity (17% to 8,267,000 gal.) and value 6% to $4,034,900).

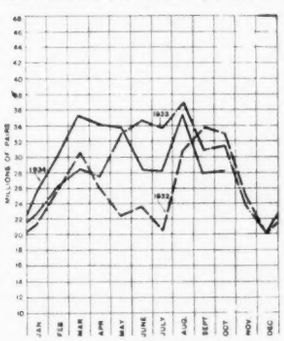
Supply for Newsprint

Southern Forest Survey staff report indicates that there is enough pulpwood in the discarded pines of the naval stores industry in Southeast Georgia alone to supply two-thirds of the annual newsprint needs of the U. S.

Textile and Tanning Chemicals

¶ Seasonal Lull in Textile and Tanning Operations Expected to Change Early in January—

Tanning factories curtailed activity in December, all centers, New England, Chicago and Wisconsin, northern New York and St. Louis, reporting manufacturing at lower levels.



Shoe production trend.

Practically all of the contracted items have been closed. Bichromate contracts have been written at unchanged levels and the market is very firm in all directions. The one weakness is that in red prussiate. Many of the natural tanstuffs are at higher levels. Of special importance was the upward revisions made in quebracho, but this move was, of course, fully anticipated in view of the new marketing policy adopted by the Argentine exporters.

Not as Great as Expected

While the usual let-up in textile activity around the holiday period was generally reported, the decline was not quite as great as at first expected and in the dyeing centers of New England and Northern New Jersey many of the plants operated with full crews in an effort to make up for time lost in the recent strike period. Immediate pick-up in all divisions of the industry is anticipated. Outlook, particularly for rayon, is satisfactory and at least 9 to 12 weeks of full-force operations is thought to be likely.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Egg yolk	$0.46	$0.44
Gambier, Singapore cubes	.07¼	.08⅛
Mangrove bark	30.00	29.00
Myrobalans, J1	25.50	24.50
Quebracho, liq.	.02⅝	.02¼
Bbls.	.03⅛	.02¾
Sumac, Ital.	60.00	59.00
Wattle Bark	32.00	31.50

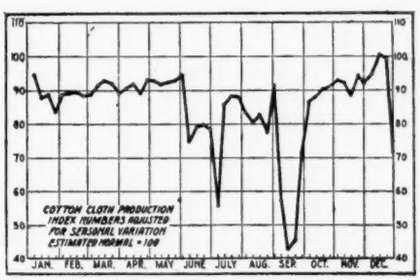
DECLINED

Valonia beards	$43.50	$44.00
Cups	28.50	30.00

DEPT. OF LABOR STATISTICS

	Nov.'34	Oct.'34	Nov.'33
Textiles:			
Employment *a*	90.9	92.3	92.9
Payrolls *a*	71.1	74.7	69.7
Leather:			
Employment *a*	81.6	83.4	79.1
Payrolls *a*	61.0	64.3	60.1

a 1923-'25 = 100.0.


COTTON CLOTH PRODUCTION
INDEX NUMBERS ADJUSTED FOR SEASONAL VARIATION
ESTIMATED NORMAL = 100
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
—N. Y. Times

Trends in cotton production.

Oils and Fats

Despite lessened trading most of the vegetable oils were quoted at higher levels at the year's close than at the end of November.

Strength in cocoanut oil was particularly pronounced and "hit" a new high for '34 in the last few days of trading. Copra was sharply higher and stocks extremely scarce. Palm kernel was another item to move into new high ground. Perilla, on the other hand, was off somewhat because of the nearness of the new crop oil. Soybean sold as the month closed at 7½c and it is reported that a number of mills have withdrawn quotations; that with farmers holding beans for higher prices crushing operations are not profitable at the present price for the oil.

Cottonseed oil markets continue to reach higher and higher levels, despite all the prophecies to the contrary that quotations are completely out of line and that a reaction is long over-due. However, the present high level is beginning to attract imports, and November statistics show that 1,981 tons of cottonseed oil entered this country. Oil is said to be on the way from China, Brazil and Egypt. At present price levels and with a 3c tariff the imported item is netting approximately 7c.

Lard has been advancing rapidly, permitting cottonseed oil further reason for shooting skyward. Hogs are said to be leaner because of the drought, the yield being about 20% under the average. On the other hand, lard stocks are still above the 5-year average and exports have been curtailed. Nevertheless, most factors point to the strong possibility of still higher lard prices over the winter months.

Unquestionably, the cottonseed oil market is being strongly influenced by the overwhelming support given to the continuation of the Bankhead cotton control measure by the cotton farmers of the South. The quota for next year has not been announced as yet and one guess appears as good as another as to what it will be, but even a considerable increase over 10,000,000 bales would appear favorable to continuation of cottonseed oil prices. The tieup of cottonseed oil with cotton is the fact that roughly 4 bales of cotton mean one barrel of oil. Thus a 12,000,000-bale cotton crop would mean 3,000,000 barrels (400 lbs. each) of oil Inasmuch as normal cottonseed oil consumption runs around 3,300,000 barrels and will be even materially larger this year owing to the price disparity and substitution for lard, another year of restriction of cotton production might well further pare the already reduced oil surplus.

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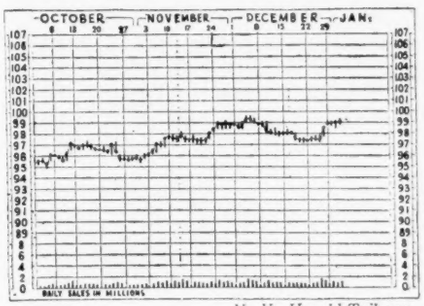
Chemical Finances

¶ A Year of Modest Value Gains —December Trading Volume Improves—Chemical Co. Earnings Compare Favorably—

Value of stocks listed on the N. Y. Stock Exchange show a modest gain of but $1,345,566,983 in the period from Dec. 1, '33 to Dec. 1, '34, compared with $10,283,319,278 in the comparable period of Dec. 1, '32 and Dec. 1, '33. Undoubtedly for the year Jan. 1, '34-Dec. 31, '34 the net gain was greater than $1,345,566,983, for the December market was a bullish one and substantial gains were recorded. The market in the last 12 months has reflected the slow recovery in business, but has also mirrored the vast amount of uncertainty that has continued to plague business. It is hardly necessary to mention that the fiscal policies of the Government have provided the chief uncertainties and that the beginning of the new year finds little real assurance that: 1, the difficulties and dangers are understood; and 2, that the Administration will promptly and without further delay rectify and eliminate the dangers. On the other hand the President's written disapproval of the agitation for prompt payment of the soldiers' bonus gives some encouragement to those who see the absolute necessity for speedy balancing of the budget and the elimination of the vast spending program of the Government.

Daily Record of Stock Market Trend



—*N. Y. Herald-Tribune*

Stocks advanced slightly in December.

For the most part, however, the President's budget message was looked upon unfavorably, postponing again any definite date for the balancing of the budget.

How Chemical Stocks Helped

It is of more than passing interest to note that of the $1,345,566,983 value gain between Dec. 1, '33 and Dec. 1, '34 chemical stocks provided $438,053,860, a very substantial part of the total and indicates how favorable chemical stocks have been viewed in the past year in comparison to most other groups. Net gains and losses in a number of the leading chemical common stocks are shown for the period Dec. 31, '33 and Dec. 31, '34:

	Dec. 31, '34	Dec. 30, '33†	Net Gain or Loss
Air Reduction	112½	99	+13½
Allied Chemical	137½	148¼	—10¾
Col. Carbon	74¾	61½	+13¼
Com. Solvents	21⅜	31¾	—10⅜
du Pont	95⅝	95⅝	
Hercules	74½	61½	+13
Mathieson	28⅝	36	— 7⅜
Monsanto	59	82‡	
Std. of N. J.	43¼	45¾	— 2½
Texas Gulf S.	34¼	40⅛	— 5⅞
Union Carbide	47⅞	47½	— ⅜
U. S. I.	44½	53	— 8½

† Last trading day; ‡ Old stock.

Losses, Gains

Most noticeable are the net losses in Allied, Commercial Solvents, and U. S. I. In December of '33 the alcohol stocks were having a spectacular boom due to the ending of prohibition and this fact, of course, explains much of the present loss. Columbian Carbon shows a worthwhile gain with carbon black sales now on a profitable basis. Considering the exchange, Monsanto's close represents a sizable appreciation after declaration of a 100% stock dividend. On the Curb Dow, despite a 50% stock dividend, also shows a net gain. Heyden Chemical also closed higher on Dec. 31, '34, over the close the year previous.

Wall St. Gossip

Allied Chemical has been a feature of strength recently, partly on gossip in the Street that the company will shortly retire its 7% preferred stock, of which there are 345,540 shares outstanding of $100 par, retirable at 120. Stock is selling at 123, according to the "Wall St. Gossip" column of the *Wall St. Journal*. Officials refuse to comment on the reports in the Street. On Dec. 31, '33, company had 47,309 shares of preferred stock in its treasury. Allied's strong cash position, together with the fact that many companies are taking similar action, undoubtedly has given rise to this talk.

9 Months' Chemical Profits

National City Bank (N. Y.) in a comparison of 9-months' profits in the years '33 and '34 reports that 13 leading chemical companies earned $70,793,000 in the first 9 months of '34 as against $49,114,000 in the first 9 months of the previous year.

Heyden Reports for 9 Months

Heyden Chemical and subsidiaries—Nine months ended Sept. 30: Net income after depreciation and other charges, $399,714, equal, after 7% preferred dividend requirements, to $2.60 a share on 147,000 common shares. Quarter ended Sept. 30: Net income, $114,680, or 74c a common share, compared with $148,450, or 97c a share, in preceding quarter and $136,584, or 89c a share, in first quarter of this year.

P. & G. Distribution

P. & G. has voted a special distribution of 4% to employees under the company's profit sharing plan, in addition to the regular dividends, ranging from 6% to 12%.

Nat. Lead Stock Dividend

National Lead directors have declared a dividend of 14 shares of common for every 100 shares held. Dividend represents treasury stock acquired in the open market in the last few years. It will be paid on Jan. 15 to stock of record of Dec. 31.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Laboratories	50c	Dec. 18	Jan. 2
Abbott Laboratories ext.	15c	Dec. 18	Jan. 2
Air Reduction	75c	Dec. 31	Jan. 15
Allied Chem.	$1.50	Jan. 11	Feb. 1
Allied Chem. pf.	$1.75	Dec. 11	Jan. 2
Alum. Co. of Am. pf.	25c	Dec. 15	Jan. 1
Alum. Co. of Am. pf.	37½c	Dec. 15	Jan. 1
Amer. Agr. Chem.	50c	Dec. 10	Dec. 31
Amer. Cyan. A & B	10c	Dec. 15	Jan. 2
Amer. Maize Prods.	25c	Dec. 24	Dec. 31
Amer. Maize Prods. pf.	$1.75	Dec. 24	Dec. 31
Bon Ami A ext.	$1.00	Dec. 22	Dec. 31
Bon Ami B ext.	50c	Dec. 22	Dec. 31
Canad. Indust. A & B	$1.00	Dec. 31	Jan. 31
Canad. Indust. pf.	$1.75	Dec. 31	Jan. 15
Celanese 7% cum. pr. pf.	$1.75	Dec. 14	Jan. 1
Celanese 7% cum. 1st pf.	$3.00	Dec. 14	Dec. 31
Chickasha Cotton Oil	50c	Dec. 14	Jan. 2
Colgate-Palmolive-Peet pf.	$1.50	Dec. 10	Jan. 1
Com. Solvents	30c	Dec. 1	Dec. 31
Devoe & Raynolds A & B	25c	Dec. 18	Jan. 2
Devoe & Raynolds 1st pf.	$1.75	Dec. 18	Jan. 2
Devoe & Raynolds 2nd pf.	$1.75	Dec. 18	Jan. 2
du Pont, deb.	$1.50	Jan. 10	Jan. 25
Eastman Kodak	$1.00	Dec. 5	Jan. 2
Eastman Kodak ext.	75c	Dec. 5	Jan. 2
Eastman Kodak pf.	$1.50	Dec. 5	Jan. 2
Freeport Texas pf.	$1.50	Jan. 15	Feb. 1
Glidden Co.	25c	Dec. 14	Jan. 2
Glidden Co. pr. pf.	$1.75	Dec. 14	Jan. 2
Hercules Powder pf.	$1.75	Feb. 4	Feb. 15
Heyden Chem. ext.	25c	Nov. 26	Jan. 2
Heyden Chem. pf.	$1.75	Dec. 20	Jan. 2
Industrial Rayon	42c	Dec. 26	Dec. 29
Int'l Nickel	15c	Dec. 1	Dec. 31
Int'l Nickel pf.	$1.75	Jan. 2	Feb. 1
Int'l Salt	37½c	Dec. 15	Jan. 2
Koppers Gas & Coke 6% cum. pf.	$1.50	Dec. 12	Jan. 2
Liquid Carbonic ext.	25c	Jan. 17	Feb. 1
Liquid Carbonic	25c	Jan. 17	Feb. 1
Mathieson Alkali	37½c	Dec. 10	Jan. 2
Mathieson Alkali pf.	$1.75	Dec. 10	Jan. 2
Monroe Chem. pf.	87½c	Dec. 15	Jan. 1
National Lead	$1.25	Dec. 14	Dec. 31
National Lead B	$1.50	Jan. 18	Feb. 1
North Am. Rayon pr. pf.	75c	Dec. 21	Jan. 1
North Am. Rayon 7% pf.	$1.75	Dec. 21	Jan. 1
Penn. Salt Mfg.	75c	Dec. 31	Jan. 15
Pratt & Lambert	25c	Dec. 15	Jan. 2
Procter & Gamble 8% pf.	$2.00	Dec. 24	Jan. 15
Sherwin-Williams cum. 7% pf.	$1.75	Dec. 15	Jan. 2
Spencer Kellogg	40c	Dec. 15	Dec. 31
Union Carbide	35c	Dec. 6	Jan. 1
United Carbon	60c	Dec. 15	Jan. 1
United Dyewood pf.	$1.75	Dec. 15	Jan. 2
United Molasses Ltd.	6%	Dec. 18	Jan. 15
Westvaco Chlorine pf.	$1.75	Dec. 15	Jan. 2
Young J. S.	$1.50	Dec. 21	Jan. 2
Young J. S. pf.	$1.75	Dec. 21	Jan. 2

Chemical Stocks and Bonds

1934 December Last	1934 December High	1934 December Low	1933 High	1933 Low	1932 High	1932 Low	Sales 1934	Sales December	Stocks	Par $	Shares Listed	An. Rate*	Earnings $-per share-$ 1933	Earnings $-per share-$ 1932
NEW YORK STOCK EXCHANGE							Number of shares							
112½	113	91¾	112	47½	63½	30⅞	201,600	15,500	Air Reduction	No	841,288	$4.50	3.79	2.73
137½	160¾	115⅛	152	70¾	88¼	42½	288,500	16,000	Allied Chem. & Dye	No	2,214,099	6.00	5.50	3.62
123	130	122⅛	125	115	120†	96½	11,400	1,300	7% cum. pf.	100	345,540	7.00	42.24	29.12
47	48	25¼	35	7¼	15½	3½	208,500	4,300	Amer. Agric. Chem.	100	315,701	2.00	*p*4.19	*p*—1.61
31¾	62½	20¾	89⅞	13	27	11	283,400	33,300	Amer. Com. Alcohol	20	260,716	None	4.56	3.01
38¼	39⅛	26¼	29¼	9¾	15½	7	118,700	8,200	Archer-Dan-Midland	No	541,546	1.50	*p*3.82	*p*1.79
40	55½	35¼	39⅛	9	25½	7	103,500	4,400	Atlas Powder Co.	No	234,235	2.00	.74	—2.06
106¾	106¾	83	83⅛	60	79½	45½	6,640	380	6% cum. pfd.	100	88,781	6.00	8.38	.47
34¼	44⅞	17⅛	58⅞	4½	12⅝	1¼	1,502,500	119,200	Celanese Corp. Amer.	No	987,800	None	3.32	— .95
17⅝	18⅛	9⅜	22⅜	7	31½	10¼	821,840	38,700	Colgate-Palm.-Peet	No	1,985,812	.75	— .57	— .74
100¾	102½	68½	88	49	95	65	22,400	3,100	6% pfd.	100	254,500	6.00	1.51	.21
74¾	77¼	58	71½	23⅛	41⅞	13½	325,000	13,900	Columbian Carbon	No	538,154	3.40	2.17	1.83
21⅝	36¾	15¾	57¼	9	13¾	3½	2,605,800	128,900	Commer. Solvents	No	2,635,371	.60	.88	.51
65¼	84½	55½	90⅝	45⅜	55⅜	24¾	390,700	38,100	Corn Products	25	2,530,000	3.00	3.87	2.77
148¾	150½	135	145¾	117½	140	99½	10,300	1,700	7% cum. pfd.	100	243,739	7.00	46.02	35.05
50½	55¼	29	33⅞	10	16¾	7	93,700	12,400	Devoe & Rayn. A	No	95,000	3.00	3.82	*r*—1.00
95⅝	103⅞	80	95⅞	32⅛	59¾	22	1,529,000	101,000	DuPont de Nemours	20	10,871,997	3.15	2.93	1.81
128½	128½	115	117	97½	105⅛	80¾	23,800	2,700	6% cum. deb.	100	1,092,699	6.00	35.58	24.00
112	116½	79	89¾	46	87¾	35¼	244,000	22,300	Eastman Kodak	No	2,250,921	4.00	4.76	2.52
138	147	120	130	110	125	99	3,020	230	6% cum. pfd.	100	61,657	6.00	180.34	98.27
25¾	50⅛	21½	49⅜	16⅛	28⅝	10	347,400	33,700	Freeport Texas	10	784,664	2.00	3.01	2.75
119	160⅛	113½	160⅛	97	...	..	3,100	200	6% conv. pfd.	100	25,000	6.00	156.73	.....
27⅜	28⅜	15⅝	20	3¼	10⅜	3⅛	812,700	36,800	Glidden Co.	No	603,304	1.15	1.54	*s*— .06
105	107½	83	91½	48	76	35	14,315	610	Glidden, 6% pfd.	100	63,044	7.00	22.60	7.85
86¼	96⅞	74	85⅞	65	...	...	57,300	4,600	Hazel Atlas	25	434,409	5.00	6.22	4.68
74½	81⅝	59	68⅝	15	29½	13⅞	101,300	7,700	Hercules Powder	No	582,679	3.00	2.79	.24
125¼	125¾	111	110⅛	85	95	70½	5,260	480	7% cum. pfd.	100	105,765	7.00	22.38	8.39
31¾	32	19⅜	85	24	40	7⅛	737,800	92,400	Industrial Rayon	No	600,000	1.68	3.01	.55
4⅝	6⅛	2	5⅞	⅞	3½	¼	274,500	8,400	Intern. Agricul.	No	436,049	None	*p* .69	*p*—4.04
33¼	37¼	15	23½	5	15	3¾	38,700	2,100	7% cum. pr. pfd.	100	100,000	None	*p*4.00	*p*—10.60
23⅞	29¼	21	23¼	6¾	12½	3½	3,175,600	182,400	Intern. Nickel	No	14,584,025	.60	.53	— .14
30	32	21	27¾	13¾	23½	9¾	50,900	3,300	Intern. Salt	No	240,000	1.50	2.04	2.14
32½	33⅛	15¾	22	7½	11	8	69,300	4,400	Kellogg (Spencer)	No	500,000	1.60	.98	*v*— .26
32⅛	43⅞	22½	37⅜	4⅜	9⅜	3¾	906,600	61,900	Libbey Owens Ford	No	2,559,042	1.20	1.64	— .13
30½	35⅜	16⅛	50	10¼	22	9	315,500	56,600	Liquid Carbonic	No	342,406	1.25	*v*1.05	*u*—1.29
28⅝	40¾	23½	46⅝	14	20⅞	9	521,900	25,000	Mathieson Alkali	No	650,436	1.50	1.70	.86
59	61⅝	39	83	25	30¾	13⅜	229,800	23,200	Monsanto Chem.	10	864,000	1.25	2.57	1.18
166	170	135	140	43¼	92	45	37,800	4,100	National Lead	100	309,831	5.00	6.98	3.15
146⅛	146½	122	128¼	101	125	87	6,600	1,500	7% cum. "A" pfd	100	243,676	7.00	18.35	13.55
121	121½	100½	109⅛	75	105	61	3,140	250	6% cum. "B" pfd.	100	103,277	6.00	30.45	15.45
7¼	13	5½	11¾	1⅜	3¾	1½	155 900	8,800	Newport Industries	1	519,347	None	.05	— .68
84½	94	60	96¼	31½	42¼	12	158,900	13,900	Owens-Illinois Glass	25	1,200,000	4.00	4.86	1.62
43⅞	44⅜	33⅛	47½	19⅝	42¾	19⅞	347,900	30,400	Procter & Gamble	No	6,410,000	1.70	1.52	*q*1.20
115	117	102½	110¾	97	103½	81	8,105	1,220	5% pfd. (ser. 2-1-29)	100	171,569	5.00	61.95	52.16
5	6¾	3⅛	7¼	1⅜	4⅜	1	168,100	6,300	Tenn. Corp.	5	857,896	None	— .11	— .89
34¼	43¼	30	45¼	15¼	26¾	12	727,300	45,000	Texas Gulf Sulphur	No	2,540,000	2.00	2.93	2.33
47⅛	50⅞	35⅞	51⅞	19¾	36⅜	15½	1,140,800	105,600	Union Carbide & Carbon	No	9,000,743	1.40	1.59	.98
49¼	50⅜	35	37¾	10¼	18	6⅝	277,500	23,900	United Carbon	No	370,127	2.40	1.39	— .05
44½	64¾	32	94	13½	36¼	13¼	385,400	38,000	U. S. Indus. Alco.	No	391,033	None	3.56	.47
21	31¾	14	36¼	7⅝	23¾	5¼	549,200	13,300	Vanadium Corp.-Amer.	No	366,637	None	—2.40	—4.36
3½	5⅜	1⅞	7⅜	⅝	2⅜	½	257,700	6,100	Virginia-Caro. Chem.	No	486,000	None	*p*—2.46	*p*—5 06
20¼	26	10	26½	3⅛	11¼	3⅛	95,100	3,400	6% cum. part. pfd.	100	213,392	None	*p* .52	*p*—5.54
80	84	59¾	63½	35⅜	69¾	20	5,460	100	7% cum. prior pfd.	100	60,000	None	*p*9.06	*p*—12.71
21½	27¼	14⅞	20½	5	12⅝	3	141,750	8,600	Westvaco Chlorine	No	284,962	.40	1.08	.79
NEW YORK CURB EXCHANGE														
16⅛	22½	14⅝	16½	3¼	8½	1⅝	207,700	55,300	Amer. Cyanamid "B"	No	2,404,194	*m* .25	.99	.14
2⅜	4⅛	2⅛	4½	1	2⅛	¾	31,300	400	British Celanese Am. R.C.R.	243	.....	None	.....	.....
104½	105¼	81	110	27	55	8	23,350	7,200	Celanese, 7% cum. 1st pfd.	100	144,379	7.00	32.24	.60
102	102	83	90	51	64¼	17	6,750	1,325	7% cum. prior pfd.	100	113,668	7.00	47.98	7.77
13	19	7	26⅞	2	5⅜	1½	24,975	1,100	Celluloid Corp.	15	194,952	None	—1.00	—3.79
11¼	14⅜	10½	11⅝	4⅛	6⅞	4½	19,300	1,300	Courtaulds' Ltd.	1 £	24,000,000	4½%	.....	.....
90½	91	67½	78	30	39	21½	83,900	14,300	Dow Chemical	No	945,000	2.00	†3.60	†1.33
10½	10¾	4	8	½	1½	¼	83,800	29,500	Duval Texas Sulphur	No	500,000	None	*z* .03	*z*— .17
39	40¾	19	19	8	...	..	20,100	1,400	Heyden Chem. Corp.	10	147,600	1.35	2.68	1.23
54⅜	57½	39	39⅞	13	19½	12⅛	29,090	6,200	Pittsburgh Plate Glass	25	2,141,305	1.40	1.87	— .03
86½	90½	47¼	47	12⅞	35	17½	58,150	19,675	Sherwin Williams	25	635.583	3.00	*y*3.54	— .44
108	109¾	100	99	80	100⅛	75	2,460	340	6% pfd. AA. cum.	100	155,521	6.00	*y*20.78	4.52
CLEVELAND STOCK EXCHANGE														
90½	91	67½	78	30	40	21½	10,468	700	Dow Chemical	No	945,000	2.00	†3.60	†1.33
PHILADELPHIA STOCK EXCHANGE														
75	75	50¼	57	25¼	40	19⅞	3,840	650	Pennsylvania Salt	50	150,000	3.00	2.17	2.42

1934 December Last	1934 December High	1934 December Low	1933 High	1933 Low	1932 High	1932 Low	Sales 1934	Sales December	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE													
105½	106¾	83⅞	89	64	80	54¼	5,181,000	659,000	Amer. I. G. Chem. Conv. 5½'s	1949	5½	M. N.	29,929,000
8⅝	17¾	5	14⅛	2⅛	18	1	3,454,000	365,000	Anglo Chilean s. f. deb. 7's	1945	7	M. N.	12,700,000
77¼	88	61½	74⅞	37	60	34½	522,000	53,000	By-Products Coke Corp. 1st 5½'s "A"	1945	5½	M. N.	4,932,000
90½	92	62	65	38½	54⅞	32	413,000	29,000	Int. Agric. Corp. 1st Coll. tr. stpd. to 1942	1942	5	M. N.	5,994,100
9¾	19½	5⅛	14⅞	2½	15¼	¼	12,892,000	776,000	Lautaro Nitrate conv. b's	1954	6	J. J.	31,357,000
89¼	98½	89⅞	99⅛	87	97¾	67	707,000	102,000	Montecatini Min & Agric. det. 7's with war.	1937	7	J. J.	7,075,045
34½	74½	34½	62	33¾	59	17	428,000	14,000	Ruhr Chem. 6's	1948	6	A. O.	3,156,000
90	90	65½	76	50	66	39	244,000	35,000	Tenn. Corp. deb. 6's "B"	1944	6	M. S.	3,007,900
88½	89½	62	81	34¾	75	30	658,000	119,000	Vanadium Corp. conv. 5's	1941	5	A. O.	4,261,000
NEW YORK CURB EXCHANGE													
104	104⅝	101⅜	103½	101	103⅛	99	96,000	2,000	Westvaco Chlorine Prod. 5½'s	1937	5½	M. S.	1,393,000

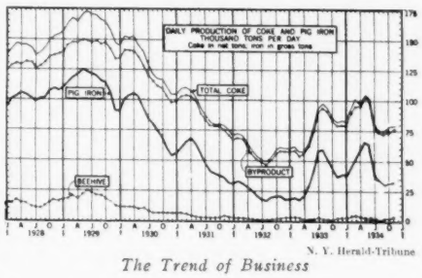
† Years ended 5-31-33-& 34; *m* Last paid, no regular rate; *p* Years ended 6-30-33 and 6-30-34; *r* Year ended 11-30-32; *s* Years ended 10-31-32 & 33; *u* Year ended 9-30-32; *v* Years ended 9-2-32 & 33; *x* Years ended 5-31-32 & 33; *y* Year ended 8-31-33; *z* Years ended 8-31-33, and 8-31-34; * Including extras.

Industrial Trends

¶ Retail Trade 15-40% Ahead of Last Year—Heavy Industries Show Signs of Expansion in Near Future — Administration Fiscal Plans in Doubt—

Prophecies of exceptionally good business for December in nearly every instance turned out to be pleasant realities. Practically every section of the country reports retail trade ahead by 10 to 25%. To many merchants the holiday trade brought the best business since the '28-'29 boom years. According to Dun & Bradstreet's latest report, compilation of the final returns for '34 will doubtless reveal an increase in retail sales of 15 to 20% over the '33 figures for the country as a whole, with gains running as high as 30 to 40% in the South, Southwest, and some sections of the Middle West. In certain sections, Christmas trade is reported to have been ahead by 25 to 40%. Such a spurt in buying was, naturally, reflected in better business for the wholesalers too. According to the Dun survey, a very nice balance has been maintained between manufacturing and distribution and the outlook for further immediate improvement is bright unless "some hampering influences be forthcoming from Congressional interference."

While most of the so-called heavy industries experienced their usual year-end slump, the decline, in most instances, was not at all alarming. In the case of steel, week by week increases have taken place now for 11 consecutive weeks and operations are at a rate 25% ahead of that prevailing at the close of '33. Automotive production schedules are said to be based on a rate almost 40% ahead of the same period a year ago.



The Trend of Business

Carloadings for the first 3 weeks were ahead of the comparative weeks of '33, but slumped somewhat in the final week of the month. Loadings in the 52 weeks of '34 totaled 30,785,594 cars, compared with 29,220,052 in '33, an increase of 5.4%, and with 28,179,952 in '32, an increase of 9.2%. Electric production continued to jump ahead of last year by a rather wide margin, averaging between 7 to 8% in excess of '33 figures. The output of 1,787,936,000 kwh. in the week ending Dec. 22 was the largest for any week since Dec. 21, '29.

Commodity prices were irregular in the 30-day period. Fisher's Commodity Index made a gain of .4 between Dec. 1 and Jan. 5, but recorded a loss of .3 in the period between Dec. 1 and Dec. 29. On the other hand, the combined index of the National Fertilizer Association showed a slight gain in the same period.

Bright Outlook

Unquestionably, business enters the new year in better shape than it did a year ago. Greater feeling of optimism is noticeable in all directions; business is expanding rapidly where 12 months ago it was rapidly contracting. After several years of delayed hopes, the durable goods industries are showing real definite signs of emerging from their lethargy and there is more reason to believe that the Administration looks more favorably upon this group than it has done in the past. The modernization plans of the Government are now reaching the fruitful stage and now promise definite aid to the paint and allied fields and to other groups within the so-called process fields. H. S. Wherrett, Pittsburgh Plate Glass president, expects paint and glass fields to go ahead about 10% in '35. *The American Glass Review* anticipates an immediate improvement in the glass field. Nearly all authorities are agreed that the textile field, specially cotton and rayon, are in for a very satisfactory 12 months period of business. Outlook for tanning is said to be more than fair. The rubber and automotive industries expect considerable expansion over '34 totals.

Fiscal Policies Important

The fiscal policies of the Government; the threat of Congress turning to radical departures from orthodox financing, and by such schemes as the bonus, larger PWA appropriations, wild old-age pension programs, etc., increasing the already enormous national debt, are the chief concern of business leaders and are the principal obstacles to effecting stability in the very near future.

Statistics of Business

	November 1934	November 1933	October 1934	October 1933	September 1934	September 1933
Auto production	78,415	60,683	132,488	134,683	168,872	191,800
Bldg. contracts*‡	$111,740	$162,340	$135,524	$145,367	$110,151	$120,134
Failures, Dun & Bradstreet	923	.....	1,091	1,206	790	1,116
Merchandise imports‡	$150,519	$128,541	$129,629	$150,867	$131,659	$146,643
Merchandise exports‡	$194,901	$184,256	$206,352	$193,069	$191,690	$160,119
Newsprint Production						
Canada, tons	240,869	193,718	235,021	191,452	196,172	179,416
U. S., tons	74,933	87,567	80,572	82,052	74,117	72,907
Newfoundland, tons	28,713	.....	25,321	.....	25,847	23,701
Total, tons	346,271	.....	342,867	.....	297,886	277,033
Plate Glass prod., sq. ft.	6,587,366	4,169,442	7,512,052	5,793,693	6,737,782	.....
Shoe production, pairs	26,000,000	23,695,000	.....	.....	27,794,162	31,234,116
Steel ingots	1,579,356	1,487,968	1,461,932	2,084,892	1,251,530	2,283,079
Steel activity, % of capacity	27.76	26.92	24.59	36.89	22.74	40.40
U. S. consumption crude rubber, tons	.....	.....	31,347	31,543	30,352	35,281
Tire shipments	.....	.....	.....	.....	3,182,908	3,503,365
Tire production	.....	.....	.....	.....	2,935,958	3,999,239
Tire inventory	.....	.....	.....	.....	8,418,906	7,594,506
Factory payrolls, totals†	59.5	55.5	60.7	59.4	57.9	59.1
Factory employment†	76.7	75.9	78.6	79.6	75.8	80.0
Dept. of Labor Indices						
Chemical price index†	.....	.....	.....	.....	80.3	78.8
Chemical employment†*a*	108.6	108.4	109.4	109.1	108.6	.....
Chemical payrolls†*a*	90.9	84.6	91.6	85.5	89.9	.....
Chemicals and Related Products						
Imports‡	.....	.....	$7,793	.....	$4,184	.....
Exports	.....	.....	$4,955	.....	$7,737	.....
Stocks, mfd. goods†	.....	.....	.....	.....	.....	120
Stocks, raw materials†	.....	.....	.....	.....	.....	104

Week Ending	Carloadings 1934	Carloadings 1933	Carloadings % of Change	Electrical Output 1934*b*	Electrical Output 1933*b*	Electrical Output % of Change	Jour. of Com. Price Index	National Metals	National & Oils Fats	National & Drugs Chem.	Mixed Fert.	Fert. Mat.	Labor Dept. All Groups Indices	Chem. Price Index & Drug	Activity % Steel	Purch. Power Fisher's Index	N. Y. Bus. Act. Times Index
Dec. 8....	551,011	541,992	+1.7	1,743,427	1,619,157	+7.7	77.3	81.7	69.4	93.8	75.0	65.7	75.5	77.8	32.7	127.0	82.5
Dec. 15....	579,935	559,419	+3.7	1,767,418	1,644,018	+7.5	77.0	81.8	68.0	93.8	76.9	65.8	75.2	77.9	34.6	127.3	82.7
Dec. 22....	547,895	531,464	+3.1	1,787,936	1,656,616	+7.9	76.3	81.9	69.7	93.8	76.9	65.6	75.4	78.1	35.2	127 6	83.8
Dec. 29....	425,120	454,765	—6.5	1,650,467	1,539,002	+7.2	78.2	81.9	71.6	94.0	76.9	65.7	76.3	....	39.2	127.1	82.9

* 37 states, F. W. Dodge Corp.; ‡ 000 omitted; † Dept. of Labor, 3 year average, 1923-1925 = 100.0; *a* Includes all allied products but not petroleum refining; *b* Kw. 000 omitted.

Prices Current

Heavy Chemicals, Coal-tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizers and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Import chemicals are so designated. Resale stocks when a market factor are quoted in addition to maker's prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1933 Average $1.56. - Jan. 1934 $1.37 - Dec. 1934 $1.26

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Acetaldehyde, drs c-l, wks lb.	...	.14	.14	.16½	...	...
Acetaldol, 95%, 50 gal drs wks .....lb.	.21	.25	.21	.31	.27	.31
Acetamide, tech, lcl, kegs..lb.	.38	.43	.40	1.35	.95	1.35
Acetanalid, tech, 150 lb bbls lb.	.24	.26	.24	.26	.26	.26
Acetic Anhydride, 100 lb cbys .....lb.	.21	.25	.21	.25	.21	.25
Acetin, tech, drs .....lb.	.22	.24	.22	.32	.30	.32
Acetone, tks, delv .....lb.	.11	.12	.10	.12	.08	.10
drs, c-l, delv .....lb.	...	.12	.12	.12	...	...
Acetyl chloride, 100 lb cbys lb.	.55	.68	.55	.68	.55	.68
ACIDS						
Abietic, kgs, bbls .....lb.	.06¾	.07	.06	.07	.06	.12
Acetic, 28%, 400 lb bbls, c-l, wks .....100 lbs.	...	2.40	2.40	2.91	2.65	2.91
glacial, bbls, c-l, wks 100 lbs.	...	8.25	8.25	10.02	9.14	10.02
glacial, USP, bbls, c-l, wks .....100 lbs.	...	12.25	..	12.25	..	...
Adipic, kgs, bbls .....lb.	...	.72	.72	.72	.72	.72
Anthranilic, refd, bbls ....lb.	.85	.95	.85	.95	.85	.95
tech, bbls .....lb.	...	.75	.65	.75	.65	.70
Battery, cbys, delv ..100 lbs.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb kgs ..lb.	.40	.45	.40	.45	.35	.45
USP, 100 lb kgs ..... lb.	.54	.59	...	...	...	...
Boric, tech, gran, 80 tons, bgs, delv .....ton *a*	...	80.00	80.00	80.00	80.00	80.00
ton *a*	...	90.00	90.00	90.00	90.00	90.00
ton *a*	...	85.00	85.00	85.00	85.00	85.00
ton *a*	...	95.00	95.00	95.00	95.00	95.00
Broenner's, bbls .....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 95%, cbys .....lb.	.53	.60	.53	.85	.85	.85
edible, c-l, wks, cbys ...lb.	1.20	1.30	1.20	1.30	...	...
synthetic, c-l, drs .....lb.	...	.22	.22	.22	...	...
wks .....lb.	...	.23	.23	.23	...	...
tks, wks .....lb.	...	.21	.21	.21	...	...
Camphoric, drs .....lb.	...	5.25	5.25	5.25	5.25	5.25
Chicago, bbls. .....lb.	...	2.10	2.10	2.10	...	...
Chlorosulfonic, 1500 lb drs, wks .....lb.	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99¾%, drs, delv lb.	.13¾	.15¾	.13½	.15¾	.11½	.14¼
Citric, USP, crys, 230 lb bbls .....lb. *b*	.28	.29	.28	.30	.29	.30
anhyd, gran, drs .....lb. *b*	...	.31	.31	.31	...	...
Cleve's, 250 lb bbls .....lb.	.52	.54	.52	.54	.52	.54
Cresylic, 99%, straw, HB, drs, wks, frt equal ..gal.	.46	.47	.46	.47	...	...
99%, straw, LB, drs, wks, frt equal .....gal.	.64	.65	.64	.65	...	...
resin grade, drs, wks, frt equal .....gal.	.54	.55	.54	.55	...	...
Crotonic, drs .....lb.	.90	1.00	.90	1.00	...	...
Formic, tech, 140 lb drs ..lb.	.11	.13	.11	.13	.10½	.13
Fuming, see Sulfuric (Oleum)						
Fuoric, tech, 90%, 100 lb. drs. .....lb.	...	.35	...	.35	...	.35
Gallic, tech, bbls .....lb.	.65	.68	.60	.70	.60	.70
USP, bbls .....lb.	.70	.80	.74	.80	...	...
Gamma, 225 lb bbls, wks...lb.	.77	.79	.77	.79	.75	.79
H, 225 lb. bbls, wks .....lb.	.50	.55	.50	.70	.60	.70
Hydriodic, USP, 10% sol. cbys .....lb.	.50	.51	.50	.51	.50	.51
Hydrobromic, 48% com 155 lb cbys, wks .....lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, see muriatic.						
Hydrocyanic, cyl, wks ....lb.	.80	1.30	.80	1.30	.80	1.30
Hydrofluoric, 30%, 400 lb bbls, wks .....lb.	.07	.07½	.07	.07½	.06	.07
Hydrofluosilicic, 35%, 400 bbls, wks .....lb.	.11	.12	.11	.12	.11	.12
Lactic, 22%, dark, 500 lb bbls .....lb.	.04½	.05	.04	.05	.04	.04½
22%, light refd, bbls ..lb.	.06½	.07	.06½	.07	...	...
44%, light, 500 lb bbls ..lb.	.11½	.12	.11½	.12	.11½	.12
44%, dark, 500 lb bbls ..lb.	.09½	.10	.09	.10	...	...
USP X, 95%, cbys ....lb.	.45	.50	...	...	...	...
USP VIII, 75%, cbys ..lb.	.43	.48	...	...	...	...
Laurent's, 250 lb bbls ....lb.	.36	.37	.36	.37	.36	.37
Linoleic, bbls .....lb.	.16	.16	.16	.16	.16	.16
Maleic, powd, kgs .....lb.	.29	.32	.25	.32	...	...
Malic, powd, kgs .....lb.	.45	.60	.45	.60	.45	.60
Metanillic, 250 lb bbls ....lb.	.60	.65	.60	.65	.60	.65
Mixed, tks, wks .....N unit	.06½	.07¼	.06½	.07¼	.06½	.07¼
S unit	.008	.009	.008	.01	.008	.01
Monochloracetic, tech, bbls lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls .....lb.	1.50	1.60	1.50	1.60	1.50	1.60

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Muriatic, 18°, 120 lb cbys, c-l, wks .....100 lb.	...	1.35	...	1.35	...	1.35
tks, wks .....100 lb.	...	1.00	...	1.00	...	1.00
20°, cbys, c-l, wks ..100 lb.	...	1.45	...	1.45	...	1.45
tks, wks .....100 lb.	...	1.20	...	1.20	...	1.20
22°, c-l, cbys, wks ..100 lb.	...	1.95	...	1.95	...	1.95
tks, wks .....100 lb.	...	1.60	...	1.60	...	1.60
CP, cbys .....lb.	.06½	.07⅛	.06½	.07⅛	.06½	.07⅛
N & W, 250 lb bbls .....lb.	.85	.87	.85	.87	.85	.95
Naphthenic, drs .....lb.	.12	.13	.10	.13	.10	.11½
Naphthionic, tech, 250 lb bbls .....lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys. c-l, wks .....100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks..100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks..100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks..100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv .....lb.	.11½	.12½	.11½	.12½	...	...
Oxalic, 300 lb bbls, wks, or N. Y. .....lb.	.11½	.12½	.11½	.12⅛	.11	.12⅜
Phosphoric, 50%, USP, cbys .....lb.	.14	.14	.14	.14	.14	.14
50%, acid, c-l, drs, wks .lb.	.06	.08	.05	.08	.05	.05
75%, acid, c-l, drs, wks .lb.	.09	.10½	.07	.10½	.07	.07
Picramic, 300 lb bbls, wks.lb.	.65	.70	.65	.70	.65	.70
Picric, kgs, wks .....lb.	.30	.40	.30	.50	.30	.50
Pyrogallic, crys, kgs, wks..lb.	1.55	1.65	1.40	1.65	1.40	1.55
Salicylic, tech, 125 lb bbls, wks .....lb.	...	.40	.33	.40	.33	.37
Sebacic, tech, drs, wks ....lb.	...	.58	...	.58	...	.58
Sulfanilic, 250 lb bbls, wks lb.	.18	.19	.18	.19	.15	.17
Sulfuric, 60°, tks, wks ...ton	...	11.00	...	11.00	...	11.00
c-l, cbys, wks ....100 lb.	...	1.10	...	1.10	...	1.10
66°, tks, wks .....ton	...	15.50	15.00	15.50	15.00	15.50
c-l, cbys, wks .....100 lb.	...	1.35	...	1.35	...	1.35
CP, cbys, wks .....lb.	.06½	.07½	.06½	.07½	.06½	.07½
Fuming (Oleum) 20% tks, wks .....ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls...lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran powd, 300 lb bbls .....lb.	...	.25	.25	.26	.20	.25
Tobias, 250 lb bbls.....lb.	.75	.80	.75	.80	.75	.80
Trichloroacetic bottles.....lb.	2.45	2.75	2.00	2.75	2.00	2.75
kgs .....lb.	...	1.75	...	1.75	...	1.75
Tungstic, tech, bbls .....lb.	1.50	1.60	1.35	1.70	1.40	1.70
Vanadic, drs, wks .....lb.	1.10	1.20	1.10	1.20	...	...
Albumen, light flake, 225 lb bbls .....lb.	.45	.53	.35	.53	.35	.43
dark, bbls .....lb.	.12	.17	.10	.17	.10	.17
egg, edible .....lb.	.85	.87	.82	.92	.74	.90
vegetable, edible .....lb.	.65	.70	.65	.70	.60	.70
ALCOHOLS						
Alcohol, Amyl, tks, delv...lb.	...	.143	...	.143	.143	.176
c-l, drs, delv .....lb.	...	.15	.15	.157	...	...
Amyl, secondary, tks, delv .....lb.	...	.108	...	.108	...	...
c-l, drs, delv .....lb.	...	.118	...	.118	...	...
Amyl, tertiary, taks, delv lb.	...	.052	...	.052	...	...
c-l, drs, delv .....lb.	...	.062	...	.062	...	...
Benzyl, bottles .....lb.	.75	1.10	.75	1.10	...	...
Butyl, normal, tks, delv .lb. *d*	...	.12	.09½	.12	.09½	.09½
c-l, drs, delv .....lb. *d*	...	.13	.10½	.13	.10½	.10½
Butyl, secondary, tks, delv .....lb. *d*	...	.096	.076	.096	...	...
c-l, drs, delv .....lb. *d*	...	.106	.086	1.06	...	...
Capryl, drs, tech, wks ..lb.	...	.85	.85	.85	.85	.85
Cinnamic, bottles .....lb.	3.25	3.65	3.25	3.65	...	...
Denatured, No. 5, c-l, drs, wks .....gal. *e*	...	.34	.30	.34	...	...
Western schedule, c-l, wks .....gal. *e*	...	.38	...	...	...	...
Denatured, No. 1, tks, wks .....gal. *e*	...	.29½	.29½	.304	...	...
c-l, drs, wks .....gal. *e*	...	.34½	...	...	...	...
Western schedule, tks, wks .....gal. *e*	...	.32½	...	...	...	...
c-l, drs, wks .....gal. *e*	...	.37½	...	...	...	...
Diacetone, tech, tks, delv .....lb. *f*	...	.16	...	...	...	...
c-l, drs, delv .....lb. *f*	...	.17	...	.17	...	...

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

		Current Market		1934 Low	1934 High	1933 Low	1933 High
Alcohols (continued)							
Ethyl, 190 proof, molasses, tks	gal. *g*	...	4.08½	...	4.08½	...	...
c-l, drs	gal. *g*	...	4.13½	...	4.13½	...	...
c-l, bbls	gal. *g*	...	4.15½	4.12½	4.24½	2.44½	2.65
	gal. *g*	4.15½	4.25½	...	...	...	...
	gal. *g*	4.27½	4.29½	...	...	...	...
absolute, drs	gal. *g*	4.55½	6.10	...	...	...	...
Furfuryl, tech, 500 lb, drs	lb.	...	.35	.35	.40	.40	.45
Hexyl, tks, delv	lb.	...	.11½	...	.11½	...	...
c-l, drs, delv	lb.	...	.12½	...	.12½	...	...
Isoamyl, prim, cans, wks	lb.	4.00	4.50	4.00	4.50	...	...
Isobutyl, refd, lcl, drs	lb.	...	.60	.60	.75	...	...
Isopropyl, refd, c-l, drs	lb.	...	.55	.45	.55	...	...
Propyl, norm, 50 gal drs	gal.	...	.75	...	.75	...	.75
Aldehyde ammonia, 100 gal drs	lb.	.80	.82	.80	.82	.80	.82
Alphanaphthol, crude, 300 lb bbls	lb.	.60	.65	.65	.70	.65	.70
Alphanaphthylamine, 350 lb bbls	lb.	.32	.34	.32	.34	.32	.34
Alum, ammonia, lump, c-l, bbls, wks	100 lb.	...	3.00	2.90	3.00	...	...
25 bbls or more, wks	100 lb.	...	3.15	...	3.15	...	...
less than 25 bbls, wks	100 lb.	..	3.25	...	3.25	...	...
Granular, c-l, bbls, wks	100 lb.	...	2.75	...	2.75	...	...
25 bbls or more, wks	100 lb.	...	2 90	...	2.90	...	...
Powd, c-l, bbls, wks	100 lb.	...	3.15	...	3.15	...	...
25 bbls, or more, wks	100 lb.	...	3.30	...	3.30	...	...
Chrome, bbls	100 lb.	7.00	7.25	6.50	7.25	4.50	6.50
Potash, lump, c-l, bbls, wks	100 lb.	...	3.25	...	3.25	...	...
25 bbls or more, wks	100 lb.	...	3.40	...	3.40	...	...
Granular, c-l, bbls, wks	100 lb.	...	3.00	...	3.00	...	...
25 bbls or more, bbls, wks	100 lb.	...	3.15	...	3.15	...	...
Powd, c-l, bbls, wks	100 lb.	...	3.40	...	3.40	...	...
25 bbls or more, wks	100 lb.	...	3.55	..	3.55	...	...
Soda, bbls, wks	100 lb.	4.00	4.15	3.50	4.15	3.50	3.75
Aluminum metal, c-l NY	100 lb.	20.00	23.30	20.00	24.30	22.00	24.30
Acetate, CP, 20%, bbls	lb.	.09	.10	.09	.10	...	...
Chloride anhyd, 99%, wks	lb.	.07	.12	.07	.12	...	...
93%, wks	lb.	.05	.08	.04	.08	..	...
Crystals, c-l, drs, wks	lb.	.06½	.07	.06½	.01	...	...
Solution, drs, wks	lb.	.03	.03½	.03	.03½	...	..
Hydrate, 96%, light, 90 lb bbls, delv	lb.	.13	.15	.13	.16½	.15	.16½
heavy, bbls, wks	lb.	.04	.04½	.04	.04½	..	...
Oleate, drs	lb.	...	.15¾	...	.15¾	...	...
Palmitate, bbls	lb.	.20	.21	.19	.21	...	...
Resinate, pp., bbls	lb.	...	.15	.12½	.15	...	...
Stearate, 100 lb bbls	lb.	.17	.19	.17	.18	.12½	.18
Sulfate, com, c-l, bgs, wks	100 lb.	...	1.35	1.35	1.35	1.25	1.50
c-l, bbls, wks	100 lb.	...	1.55	1.55	1.55	...	...
Sulfate, iron-free, c-l, bgs, wks	100 lb.	...	1.90	1.90	1.90	1.90	1.95
c-l, bbls, wks	100 lb.	...	2.05	2.05	2.05	...	...
Aminoazobenzene, 110 lb kgs	lb.	...	1.15	...	1.15	...	1.15
Ammonia anhyd com, tks	lb.	.04½	.05½	.04½	.05½	.04½	.05½
Ammonia anhyd, 100 lb cyl	lb.	.15¼	.21½	.15¼	.21½	.15¼	.15½
26°, 800 lb drs, delv	lb.	.02½	.03	.02½	.03	.02½	.03
Aqua 26° tks NH	cont.	...	.05	...	.05	...	.05
tk wagon	lb.	...	.024	...	..	...	..
Ammonium Acetate, kgs	lb.	.26	.33	.26	.33	.26	.33
Bicarbonate, bbls, f.o.b. plant	100 lb.	5.15	5.71	5.15	5.71	...	5.15
Bifluoride, 300 lb bbls	lb.	.15	.17	.15	.17	.15¼	.17
carbonate, tech, 500 lb bbls	lb.	.08	.12	.08	.12	.08	.12
Chloride, White, 100 lb bbls, wks	100 lb	4.45	4.90	4.45	5.25	4.45	5.25
Gray, 250 lb bbls wks	lb.	5.00	5.75	5.00	5.75	5.25	5.75
Lump, 500 lbs cks spot	lb.	.10½	.11	.10	.11	.10	.11
Lactate, 500 lb bbls	lb.	.15	.16	.15	.16	.15	.16
Linoleate	lb.	.11	.12	.11	.12	...	.11
Nitrate, tech, cks	lb.	.04	.05	.03¾	.05	.03¾	.10
Oleate, drs	lb.	...	.10	...	.10	...	.10
Oxalate, neut, cryst, powd, bbls	lb.	.26	.27	.26	.27	...	...
pure, cryst, bbls, kgs	lb.	.27	.28	.27	.28	...	...
Serchlorate, kgs	lb.	...	.16	.16	.16	...	..
Persulfate, 112 lb kgs	lb.	.22½	.25	.20	.25	.20	.22½
Phosphate, dibasic tech, powd, 325 lb bbls	lb.	.08	.10	.08	.11½	.08½	.11½
Sulfate, dom, f.o.b., bulk	ton	...	24.00	22.00	25.00	20.00	25.00
200 lb bgs	ton	...	25.80	...	25 80	...	...
100 lb bgs	lb.	...	26.50	...	26.50	...	...
Sulfocyanide, kgs	lb.	...	.50	...	.50	.36	.50
Amyl Acetate (from pentane) tks delv	lb.	...	.13½	...	.13½	...	.13½
tech, drs, delv	lb.	.142	.149	.142	.149	.138	.149
secondary, tks, delv	lb.	...	.108	.09	.108	...	.09
c-l, drs, delv	lb.	.118	.123	...	.123	...	...
Alcohol, see Alcohol, Amyl, also Fusel Oil.							

g Grain alcohol 20c a gal. higher in each case.

		Current Market		1934 Low	1934 High	1933 Low	1933 High
Amyl Chloride, norm drs, wks	lb.	.56	.68	.56	.68	...	...
Chloride, mixed, drs, wks	lb.	.07	.077	.07	12.2	...	...
tks, wks	lb.	...	.06	.06	10.5	...	...
Lactate, drs, wks	lb.	...	.50	...	.50	...	...
Mercaptan, drs, wks	lb.	...	1.10	...	1.10	...	...
Stearate, drs, wks	lb.	...	.31	...	.31	...	...
Amylene, drs, wks	lb.	.102	.11	.10	.11	...	...
tks, wks	lb.	...	.09	...	.09	...	...
Aniline Oil, 960 lb drs and tks	lb.	.15	.17½	.15	.17½	.14½	.16
Annatto fine	lb.	.34	.37	.34	.37	.34	.37
Anthracene, 80%	lb.	...	.75	...	.75	...	...
40%	lb.	...	.18	...	.18	...	...
Anthraqumone, sublimed, 125 lb bbls	lb.	.45	.50	.45	.50	...	.45
Antimony, metal slabs, ton lots	lb.		.14½	.07	.14½	.05⅝	.07¼
Needle, powd, bbls	lb.	.07¾	.08¼	.07	.09	.07	.09
Butter of, see Chloride.							
Chloride, soln cbys	lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls	lb.	10¼	.11	.08	.11	.07½	.11
Salt, 63% to 65%, tins	lb.	.22	.24	.22	.24	.20	.24
Sulfuret, golden, bbls	lb.	.19	.23	.16	.23	.16	.20
Vermilion, bbls	lb.	.35	.42	.35	.42	.38	.42
Archil, conc, 600 lb bbls	lb.	.21	.27	.21	.27	.20	.21
Double, 600 lb bbls	lb.	.18	.20	.18	.20	.16	.17
Triple, 600 lb bbls	lb.	.18	.20	.18	.20	.16	.17
Arglos, 80%, casks	lb.	.15	.16	.15	.16	.12	.15
Crude, 30%, casks	lb.	.07	.08	.07	.09	.06¾	.09
Aroclors, wks	lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbl	lb.	.08¾	.09¾	.08¾	.09¼	...	...
Arsenic, Red, 224 lb cs kgs	lb.	...	.15¾	.14	.15¾	.09⅜	.14¾
White, 112 lb kgs	lb.	.03½	.04½	.03½	.05	.04	.05
Metal	lb.	.40	.42	.40	.45	...	...
Asbestine, c-l wks	ton	13.00	15.00	13.00	15.00	13.00	15.00
Barium Carbonate precip, 200 lb bgs, wks	ton	56.50	61.00	56.50	61.00	56.50	61.00
Nat (witherite) 90% gr, c-l, wks, bgs	ton	42.00	45.00	42.00	45.00	...	...
Chlorate, 112 lb kgs NY	lb.	.14	.16	.14	.16	.13¾	.16
Chloride, 600 lb bbl wks	ton	72.00	74.00	72.00	74.00	61.50	74.00
Dioxide, 88%, 690 lb drs	lb.	.11	.12	.11	.13	.11	.13
Hydrate, 500 lb bbls	lb.	.05½	.06	.04¾	.06	.04¼	.05
Nitrate, 700 lb cks	lb.	...	.08¼	...	.08¼	...	.07¼
Barytes, floated, 350 lb bbls wks	ton	23.00	30.50	23.00	30.50	22.20	30.50
Bauxite, bulk, mines	ton	7.00	10.00	5.00	10.00	5.00	6.00
Benzaldehyde, tech, 945 lb drs, wks	lb.	.60	.62	.60	.65	.60	.65
Benzene (Benzol), 90%, Ind, 8000 gal tks, frt allowed	gal.	...	.15	.15	.20½	.20	.22
90% c-l, drs	gal.	...	.24	...	.24	...	...
Ind Pure, tks, frt allowed	gal.	...	.15	.15	.20½	.20	.22
Benzidine Base, dry, 250 lb bbls	lb.	.67	.69	.67	.69	.65	.67
Benzoyl Chloride, 500 lb drs	lb.	.40	.45	.40	.45	.40	.45
Benzyl Chloride, tech, drs	lb.	.30	.40	.30	.40	...	.30
Beta-Naphthol, 250 lb bbl, wks	lb.	...	.24	...	.24	...	.24
Naphthylamine, sublimed, 200 lb bbls	lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls	lb.	.53	.55	.53	.58	.53	.58
Bismuth metal		1.10	1.20	1.10	1.30	.85	1.30
Chloride, boxes	lb.	3.20	3.25	...	...	...	...
Hydroxide, boxes	lb.	3.15	3.20	...	...	...	...
Oxychloride, boxes	lb.	2.95	3.00	...	...	...	...
Subbenzoate, boxes	lb.	3.25	3.30	...	...	...	...
Subcarbonate, kgs	lb.	1.65	1.70	...	...	...	...
Trioxide, powd, boxes	lb.	3.45	3.50	...	...	...	...
Subnitrate		1.40	1.45	1.40	1.60	.95	1.40
Blackstrap, cane (see Molasses, Blackstrap).							
Blanc Fixe, 400 lb bbls, wks	ton *h*	42.50	70.00	42.50	70.00	42.50	75.00
Bleaching Powder, 800 lb drs c-l wks contract	100 lb.	...	1.90	...	1.90	1.75	1.90
lcl, drs, wks	lb.	2.15	3.50	2.00	3.50	...	...
Blood, dried, f.o.b., NY	unit	...	2.75	2.40	3.25	1.55	2.75
Chicago, high grade	unit	...	3.25	2.00	3.10	...	...
Imported shipt	unit	...	3.05	2.75	3.20	1.90	3.00
Blues, Bronze Chinese Milori							
Prussian Soluble	lb.	.36½	.38	.35½	.38	...	.35
Bone, 4½ + 50% raw, Chicago	ton	19.00	20.00	19.00	25.00	19.00	28.00
Bone Ash, 100 lb kgs	lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls	lb.	.05½	.08¼	.05½	.08¼	.05½	.08
Meal, 3% & 50%, imp.	ton	23.50	24.00	16.00	24.00	18.00	27.50
Domestic, bgs, Chicago	ton	16.00	18.00	...	...	...	...
Borax, tech, gran, 80 ton lots, sacks, delv	ton *i*	...	36.00	36.00	36.00	36.00	36.00
bbls, delv	ton *i*	...	46.00	46.00	46.00	46.00	46.00
c-l, sacks, delv	ton *i*	...	40.00	40.00	40.00	40.00	40.00
c-l, bbls, delv	ton *i*	...	50.00	50.00	50.00	50.00	50.00
Tech, powd, 80 ton lots, sacks	ton *i*	...	41.00	41.00	41.00	41.00	41.00
bbls, delv	ton *i*	...	51.00	51.00	51.00	51.00	51.00
c-l, sacks, delv	ton *i*	...	45.00	45.00	45.00	45.00	45.00
c-l, bbls, delv	ton *i*	...	55.00	55.00	55.00	55.00	55.00
Bordeaux Mixture, jobbers, East, c-l, tins, drs, cases	lb.	.08	.16	...	.16	...	...
Jobbers, West, c-l	lb.	.08	.10	...	.10	...	...
Dealers, East, c-l	lb.	.08½	.16½	...	.16½	...	...
Dealers, West, c-l	lb.	.09	.11	...	.11	...	...

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Prices

		Current Market		1934 Low	1934 High	1933 Low	1933 High
Bromine, cases	lb.	.30	.43	.30	.43	.36	.43
Bronze, Al, pwd, 300 lb drs	lb.	.80	1.50	.80	1.50	...	...
Gold, blk	lb.	.40	.55	.40	.55	.40	.55
Butanes, com 16-32° group 3 tks	lb.	...	.04	.02¾	.04	.02¾	.04
Butyl, Acetate, norm drs, frt allowed	lb.	.13	.13½	.11	.14	.11	.139
tks, frt allowed	lb.	.12	.13	.10	.13	.10	.124
Secondary tks, frt allowed	lb.	...	.096	.08	.096	...	...
drs, frt, allowed	lb.	.106	.111	...	.111	...	...
Aldehyde, 50 gal drs wks	lbs.	.19	.21	.19	.36	.31½	.36
Secondary, drs	lb.	.60	.75	.60	.75	...	...
Carbinol, norm drs, wks	lb.	.60	.75	.60	.75	...	...
Furoate, tech, 50 gal drs	lb.	...	.65	.60	.65	.50	.60
Lactate drs	lb.	.22½	.23½	.22½	.29	...	...
Propionate, drs	lb.	.18	.18½	.17	.22	.20	.22
tks, delv	lb.	...	.17	...	.17	...	...
Stearate, 50 gal drs	lb.	...	.26	.25	.26	.25	.25
Tartrate, drs	lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes	lb.	.75	.85	.65	.85	.65	.75
Calcium, Acetate, 150 lb bgs c-l, delv	100 lb.	...	2.00	2.00	3.00	2.50	3.00
Arsenate, jobbers, East of Rocky Mts, drs	lb.	.06	.06½	...	...	...	...
dealers, drs	lb.	.06¼	.07½	...	...	...	...
South, jobbers, drs	lb.	.06	.06½	...	...	...	...
dealers, drs	lb.	.06¼	.06½	...	...	...	...
Carbide, drs	lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs c-l	lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, flake, 375 lb drs c-l wks	ton	...	19.50	...	19.50	19.50	21.00
Solid, 650 lb drs c-l f.o.b. wks	ton	...	17.50	...	17.50	17.50	18.00
Ferrocyanide, 350 lb bbls wks	lb.	...	.17	...	.17	.17	.17
Furoate, tech, 100 lb drs	lb.	...	.25	.25	.30	...	.30
Gluconate, tech, 125 lb bbls	lb.	...	.28	.25	.28	...	...
Nitrate, 100 lb bgs	ton	...	26.50	...	26.50	24.00	26.50
Palmitate, bbls	lb.	.20	.21	.19	.20	.16	.19
Peroxide, 100 lb drs	lb.	...	1.25	...	1.25	...	1.25
Phosphate, tech, 450 lb bbls	lb.	.07½	.08	.07½	.08	.07½	.08
Resinate, precip, bbls	lb.	.13	.14	.13	.14	...	...
Stearate, 100 lb bbls	lb.	.17	.19	.17	.19	.12½	.18
Camphor, slabs	lb.	.50	.52	.51	.59	.35½	.59
Powder	lb.	.50	.52	.51	.59	.38	.59
Camwood, Bk, ground bbls	lb.	.16	.18	.16	.18	.16	.18
Carbon, Decolorizing, drs c-l	lb.	.08	.15	.08	.15	.08	.15
Black, c-l, bgs, delv, price varying with zone	lb.	.0445	.0535	.0445	.0535	...	...
lcl, bgs, delv, all zones	lb.	...	.07	.06½	.07	...	...
cartons, delv	lb.	...	.07¾	...	.07¾	...	...
cases, delv	lb.	...	.08¼	...	.08¼	...	...
Bisulfide, 500 lb drs	lb.	.05¼	.08	.05½	.08	.05½	.06
Dioxide, Liq 20-25 lb cyl	lb.	.06	.08	.06	.08	...	.06
Tetrachloride, 1400 lb drs, delv	lb.	.05¼	.06	.05¼	.06	.05¼	.07
Casein, Standard, Dom grd	lb.	.09½	.12½	.09¼	.13	.06½	.15
80-100 mesh, c-l, bgs	lb.	.10	.13	.10	.14	...	...
Castor Pomace, 5¼ NH_3, cl, bgs, wks	ton	...	18.50	...	...	...	...
Imported, ship, bgs	ton	19.50	20.00	...	...	...	...
Celluloid, Scraps, ivory cs	lb.	.17	.18	.13	.18	.13	.15
Transparent, cs	lb.	...	.20	.16	.20	...	.16
Cellulose, Acetate, 50 lb kgs	lb.	.55	.60	.55	.90	.80	.90
Chalk, dropped, 175 lb bbls	lb.	.03	.03¼	.03	.03¾	.03	.03¼
Prec p, heavy, 560 lb cks	lb.	.03	.04	.03	.04	.02	.03½
Light, 250 lb cks	lb.	.03	.04	.03	.04	.02½	.03½
Charcoal, Hardwood, lump, blk, wks	bu.	...	.15	.12	.18	.18	.19
Willow, powd, 100 lb bbl wks	lb.	.06	.06¼	.06	.06¼	.06	.06¼
bgs, delv	ton	25.00	30.00	...	...	...	...
Chestnut, clarified bbls wks	lb.	...	.01⅞	.01⅝	.01⅞	.01¼	.02
25% tks wks	lb.	...	.01½	.01¼	.01½	.012	.01½
Pwd, 60%, 100 lb bgs, wks	lb.	...	.04⅞	...	.04⅞	...	.04¾
China Clay, c-l, blk mines	ton	...	7.00	7.00	9.00	8.00	9.00
Powdered, bbls	lb.	.01	.02	.01	.02	.01	.02
Pulverized, bbls wks	ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, blk	ton	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine, cyls, lcl, wks contract	lb.	.07½	.08½	.07	.08½	.07	.08½
cyls, c-l, contract	lb. *j*	...	.05½	...	.05½	...	.05½
Liq tk wks contract	100 lb.	...	2.00	1.85	2.00	1.75	1.85
Multi c-l cyls wks cont.	lb.	2.15	2.40	2.00	2.40	...	...
Chloroacetophenone, tins, wks	lb.	...	2.00	...	...	...	...
Chlorobenzene, Mono, 100 lb drs, lc-l, wks	lb.	.06	.07½	.06	.07½	.06	.07½
Chloroform, tech, 1000 lb drs	lb.	.20	.21	.20	.21	.15	.20
USP, 25 lb tins	lb.	.30	.31	.30	.35	...	...
Chloropicrin; comml cyls	lb.	.85	.90	.85	1.25	.90	1.35
Chrome, Green, CP	lb.	.20	.30	.20	.30	.28	.29
Commercial	lb.	.06¼	.10	.06¼	.10	.06¼	.10
Yellow	lb.	.15	.16	.15	.16	.14	.16
Chromium, Acetate, 8% Chrome bbls	lb.	.05	.05¼	.05	.05¾	.04¾	.05¼
20° soln, 400 lb bbls	lb.	...	.05½	...	.05½	...	.05½
Fluoride, powd, 400 lb bbl	lb.	.27	.28	.27	.28	.27	.28

j A delivered price.

Current

	Current Market		1934 Low	1934 High	1933 Low	1933 High
Coal tar, bbls .....bbl.	7.25	9.00	7.25	9.00	8.50	9.00
Cobalt Acetate, bbls .....lb.	...	.60	.60	.80	...	...
Carbonate tech, bbls ....lb.	1.35	1.40	1.34	1.40	...	...
Hydrate, bbls .....lb.	1.66	1.76	1.66	1.76	...	...
Linoleate, paste, bbls ...lb.	...	.30	.30	.40	...	...
Resinate, fused, bbls ...lb.	...	.12½	...	.12½	...	...
Precipitated, bbls .....lb.	...	.32	.32	.42	.41	.42
Cobalt Oxide, black, bgs ..lb.	1.25	1.35	1.25	1.35	1.15	1.35
Cochineal, gray or bk bgs lb.	.34	.39	.33	.42	.36	.42
Teneriffe silver, bgs ....lb.	.35	.40	.34	.43	.37	.43
Copper, metal, electrol 100 lb.	...	9.00	7.87½	9.00	5.00	9.00
Carbonate, 400 lb bbls ..lb.	...	.08¼	...	.08¼	.07	.08
52-54% bbls .....lb.	.14½	.16¼	.15½	.16	.15¾	.17¼
Chloride, 250 lb bbls ...lb.	.17	.18	.17	.18	.17	.18
Cyanide, 100 lb drs ....lb.	.37	.38	.37	.40	.39	.40
Oleate, precip, bbls .....lb.	...	.20	...	.20	...	...
Oxide, red, 100 lb bbls ..lb.	.15	.17	.12½	.17	.14¾	.15
black bbls, wks .....lb.	.16	.16½	...	...	...	...
Resinate, precip, bbls ...lb.	.18	.19	.18	.19	...	...
Stearate, precip, bbls ...lb.	.35	.40	.35	.40	...	...
Sub-acetate verdigris, 400 lb bbls .....lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-l wks 100 lb.	...	3.85	3.75	3.85	3.00	3.75
Copperas, crys and sugar bulk c-l, wks, bgs .....ton	12.00	13.00	12.00	14.50	14.00	14.50
Corn Syrup, 42 deg, bbls .....100 lb.	...	3.49	3.04	3.59	2.61	3.04
43 deg, bbls .....100 lb.	...	3.54	3.09	3.64	2.66	3.09
Cotton, Soluble, wet, 100 lb bbls .....lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, USP, powd & gran, 300 lb bbls .....lb.	...	.17¼	.17½	.19½	.14½	.17¾
Creosote, USP, 42 lb cbys lb.	.45	.47	.45	.47	.40	.47
Oil, Grade 1, tks .....gal.	.11½	.12½	.10	.12½	.10	.12
Grade 2 .....gal.	.10½	.11½	.10½	.12	.11	.12
Cresol, USP, drs .. ..lb.	.11	.11½	.11	.11½	.10½	.11
Crotonaldehyde, 98% 50 gal drs .....lb.	.32	.36	.26	.36	.32	.36
Cudbear, English .....lb.	.19	.25	.19	.25	.16	.25
Philippine, 100 lb bale ..lb.	.03½	.04¾	.03½	.04¾	...	...
Cyanamid, bags c-l frt allowed Ammonia unit	...	1.07½	...	1.07½	.97½	1.07½
Dextrin, corn, 140 lb bgs f.o.b., Chicago ...100 lb.	...	4.05	3.50	4.20	2.89	3.84
British Gum, bgs ...100 lb.	...	4.20	3.75	4.60	3.89	3.92
White, 140 lb bgs ..100 lb.	4.00	4.10	3.47	4.20	2.94	3.79
Potato, Yellow, 220 lb bgs .....lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.09
White, 220 lb bgs, lcl ...lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 bgs, lcl ....lb.	...	.08¾	.06¾	.08¾	.06¾	.08
Diamylamine, drs, wks ....lb.	...	1.00	...	1.00	...	...
Diamylene, drs, wks .....lb.	.095	.102	.09	.102	...	...
tks, wks .....lb.	...	.08½	...	.08½	...	...
Diamylether, wks, drs ....lb.	.085	.092	.09	.77	...	...
tks, wks .....lb.	...	.075	...	...	...	...
Diamylphthalate, drs wks gal.	...	.20½	...	.20½	...	...
Diamyl Sulfide, drs, wks lb.	...	1.10	...	1.10	...	...
Dianisidine, bbls .....lb.	2.25	2.45	2.35	2.45	2.35	2.70
Dibutylphthalate, drs, wks lb.	.22	.23	.20½	.21	.20½	.22
Dibutyltartrate, 50 gal drs lb.	.29½	.31½	.29½	.31½	.29½	.21
Dichlorethylene, drs .....gal.	.29	...	.29	...	...	...
Dichloroethylether, 50 gal drs, wks .....lb.	.16	.17	.16	.21	.16	.21
tks, wks .....lb.	...	.15	...	.15	...	...
Dichloromethane, drs, wks lb.	...	.15	...	.15	...	...
tks, wks .....lb.	...	.02½	...	.02½	...	...
Dichloropentanes, drs, wks lb.	.032	.040	.0278	.040	...	...
tks, wks .....lb.	...	.02½	...	.02½	...	...
Diethylamine, 400 lb drs ..lb.	2.75	3.00	2.75	3.00	2.75	3.00
Diethyl Carbinol, drs .....lb.	.60	.75	.60	.75	...	...
Diethylcarbonate, com drs lb.	.31⅜	.35	.31⅜	.35	...	...
90% grade, drs .....lb.	...	.25	...	.25	...	...
Diethylaniline, 850 lb drs..lb.	.52	.55	.52	.55	.52	.55
Diethylorthotoluidin, drs ..lb.	.64	.67	.64	.67	.64	.67
Diethyl phthalate, 1000 lb drs .....lb.	.26	.27	.26	.27	.20	.26
Diethylsulfate, tech, 50 gal drs .....lb.	...	...	...	...	...	...
Diethyleneglycol; drs .....lb.	.14	.16	.14	.16	.14	.16
Mono ethyl ethers, drs..lb.	.15	.17	.15	.17	.15	.16
tks, wks .....lb.	...	.15	...	...	...	...
Mono butyl ether, drs ..lb.	...	.26	...	.26	...	.26
Diethylene oxide, 50 gal drs .....lb.	.26	.27	.26	.27	.26	.27
Diglycol Oleate, bbls .....lb.	.16	.18	.16	.18	...	...
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis .....lb.	...	.95	.95	1.20	...	...
Dimethylaniline, 340 lb drs lb.	.29	.30	.29	.30	.25	.28
Dimethyl Ethyl Carbinol, drs .....lb.	.60	.75	.60	.75	...	...
Dimethyl phthalate, drs ...lb.	.21½	.24½	.24	.24½	...	...
Dimethysulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls .....lb. *k*	.17	.19½	.17	.19½	...	.18
Dintrochlorobenzene, 400 lb bbls .....lb.	.14	.15½	.14	.15½	.13	.15
Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls lb.	.23	.24	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls lb.	.15½	.16½	.15½	.16½	.15	.17.
Diphenyl .....lb.	.15	.25	.15	.25	.15	.40
Diphenylamine .....lb.	.31	.32	.31	.34	.31	.34
Diphenylguanidine, 100 lb bbl .....lb.	.36	.37	.36	.37	.30	.37

k Higher price is for purified material.

Coal Tar Diphenylguanidine

Barrett Standard

BENZOL

TOLUOL

XYLOL

SOLVENT NAPHTHA

All Barrett Standard Light Oil Distillates are made to rigid specifications under a system of strict laboratory control which has been perfected during Barrett's eighty years of successful manufacturing experience. Service and deliveries are *Barrett Standard* also. Shipments are made in tank-cars or drums, or by express tank-trucks direct to your plant if it is located within fifty or sixty miles of our distributing points in thirteen industrial centers. Phone, wire or write for information.

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PHENOL (Natural), U.S.P. 39.5°C.M. Pt. 40°C.M.Pt., Technical 39°C.M.Pt. Crude 82-84% and 90-92%... CRESOL: U.S.P., Meta Para, Ortho, Special Fractions... CRESYLIC ACID; 99%, Straw Color and 95%, Dark... XYLENOLS... TAR ACID OILS... NAPHTHALENE: Crude, Refined Chipped, Flake and Ball... RUBBER SOFTENERS... CUMAR*: Paracoumarone-indene Resin... BARRETAN*... PICKLING INHIBITORS... PYRIDINE: Refined, Denatured and Commercial... PICOLINES... QUINOLINES... FLOTATION OILS and REAGENTS... HYDROCARBON OIL... SHINGLE STAIN OIL... SPECIAL HEAVY OIL... HI-FLASH NAPHTHA. *Reg. U. S. Pat. Office

THE BARRETT COMPANY

40 Rector Street — New York, N. Y.

The following

ORGANIC CHEMICALS

ARE AVAILABLE FOR SPOT OR CONTRACT SALE

1:2:4 ACID
ACETYL ORTHO-TOLUIDINE
ALPHA-NAPHTHOL
ALPHA-NAPHTHYLAMINE
ALPHA-NITRONAPHTHALENE
AMINOAZOBENZENE-SODIUM-SULFONATE
AMINOAZOTOLUENE
AMINO G SALT
AMINO J SALT
ANILINE
ANTIOXIDANTS
BENZIDINE (BASE)
BENZOIC ACID, TECHNICAL
BETA-HYDROXYNAPHTHOIC ACID
BETA-NAPHTHYLAMINE
BROENNER'S ACID
CATECHOL
CHICAGO ACID
CLEVE'S ACIDS
CRESIDINE
DENATURED ALCOHOLS
DIANISIDINE (BASE)
DIBENZYL-PARA-AMINOPHENOL
DIBUTYLAMINE
DIETHYLANILINE
DIETHYL-META-AMINOPHENOL
DIMETHYLAMINE
DIMETHYLANILINE
DINITROBENZENE
DINITROCHLOROBENZENE
DINITROPHENOL
DINITROSTILBENEDISULFONIC ACID
DINITROTOLUENE
DINITROTOLUENE OIL
DI-ORTHO-TOLYLTHIOUREA
DIPHENYLAMINE
EPSILON ACID
ETHER
ETHYLACETANILIDE
ETHYL ALCOHOL
ETHYLBENZYLANILINE
FLOTATION REAGENTS
GAMMA ACID
G SALT
INHIBITORS
J ACID
KOCH ACID
L ACID
LAURENT'S ACID
METANILIC ACID
META-NITROANILINE
META-NITRO-PARA-TOLUIDINE
META-NITROTOLUENE
META-PHENYLENEDIAMINE
META-TOLUIDINE
META-TOLYLENEDIAMINE
META-XYLIDINE

DU PONT
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & COMPANY, INC.
Organic Chemicals Department
Wilmington, Delaware

Dip Oil
Glycerin

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Dip Oil, see Tar Acid Oil.					
Divi Divi pods, bgs shipmt. ton	36.00	40.00	35.00	40.00	26.00	36.00
Extract .....lb.	.05	.05½	.05	.05½	.05	.05½
Egg Yolk, 200 lb. cases ...lb.	.46	.48	.40	.54	.40	.43
Epsom Salt, tech, 300 lb bbls c-l NY .....100 lb.	2.20	2.25	2.20	2.25	...	2.20
USP, c-l, bbls .....100 lb.	...	2.25	2.25	2.25	...	...
Ether, USP anaesthesia 55 lb drs .....lb.	.22	.23	.22	.24	.22	.24
(Conc) .....lb.	.09	.10	.09	.10	.09	.10
Ether, Isopropyl 50 gal drs lb.	.07	.08	.07	.08	.07	.08
tks, frt allowed .....lb.	...	.06	...	...	...	...
Nitrous, conc, bottles ...lb.	.75	.77	.75	.77	...	...
Synthetic, wks, drs ....lb.	.08	.09	.08	.09	...	...
Ethyl Acetate, 85% Ester tks .....lb.	.07½	.08	.07½	.08	.07½	.09
drs .....lb.	.08½	.09	.08½	.09	.08½	.10
Anhydrous, tks .....lb.	...	.08½	.08½	.10	.09	.10
drs .....lb.	.09½	.10	.09½	.10¼	.10	.10¼
Acetoacetate, 50 gal drs lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drs .....lb.	.50	.55	.50	.55	.50	.55
Chloride, 200 lb drs ....lb.	.22	.24	.22	.24	.22	.24
Chlorocarbonate cbys .. lb.	...	.30	...	.30	...	.30
Crotonate, drs .....lb.	1.00	1.25	1.00	1.25	...	...
Ether, Absolute, 50 gal drs .....lb.	.50	.52	.50	.52	.50	.52
Lactate, drs, wks .....lb.	.25	.29	.25	.33	.25	.29
Methyl Ketone, 50 gal drs, frt allowed .....lb.	.08½	.09	.08½	.09	...	.12½
tks, frt allowed .....lb.	...	.07½	...	...	...	...
Oxalate, drs, wks .....lb.	.37½	.55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks .....lb.	.30	.30½	.30	.30½	.30	.30½
Ethylene Dibromide, 60 lb drs .....lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont .....lb.	.75	.85	.75	.85	.75	.85
Dichloride, 50 gal drs ..lb.	.0545	.0994	.0545	.09	.05	.09
Glycol, 50 gal drs, wks lb.	.26	.28	.26	.28	.25	.28
Mono Butyl Ether, drs, wks	.20	.21	.20	.21	...	.20
tks, wks .....lb.	...	.19	.19	.19	...	...
Mono Ethyl Ether, drs, wks	.16	.17	.15	.17	.15	.17
tks, wks .....lb	...	.15	.15	.15	...	...
Mono Ethyl Ether Acetate, drs, wks	.17½	.18½	.16½	.18½	.16½	.18
tks, wks .....lb.	...	.16½	.16½	.16½	...	...
Mono, Methyl Ether, drs .....lb	.21	.23	.21	.23	.21	.23
Stearate	.18	.18	.18	.18	.18	.18
Oxide, cyl .....lb.	...	.75	...	.75	...	.75
Ethylidenaniline .....lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, blk pottery .....ton	...	14.50	...	14.50	14.00	16.50
Powd, blk, wks .....ton	14.00	14.50	13.50	14.50	13.50	14.50
Ferric Chloride, tech, crys, 475 lb bbls .....lb.	.05	.07½	.05	.07½	.04½	.07½
sol, cbys .....lb.	.06¼	.06½	...	...	...	...
Fish Scrap, dried, unground, wks .....unit *l*	...	2.50	2.25	2.60	1.85	2.75
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis .....unit *m*	...	2.00	2.00	2.50	1.85	2.50
Fluorspar, 98%, bgs	28.00	35.50	28.00	35.50	28.00	35.50
Formaldehyde, USP, 400 lb bbls, wks .....lb.	.06	.07	.06	.07	.06	.07
Fossil Flour .....lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines .....ton	6.50	15.00	6.50	15.00	15.00	20.00
Imp powd, c-l, bgs .....ton	23.00	30.00	23.00	30.00	24.00	30.00
Furfural (tech) drs, wks lb.	.10	.25	.10	.25	.10	.15
Furfuramide (tech) 100 lb drs .....lb.	...	.30	...	.30	...	.30
Furfuryl Acetate, 1 lb tins lb.	...	5.00	...	5.00	...	5.00
Fusel Oil, 10% impurities lb.	.16	.18	.16	.18	.14½	.18
Fustic, chips .....lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb boxes ..lb.	.20	.23	.20	.23	.18	.23
Liquid 50°, 600 lb bbls..lb.	.08½	.12	.08½	.12	.07	.10
Solid, 50 lb boxes .....lb.	.16	.18	.16	.18	.14	.18
Sticks .....ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls ..lb.	.42	.43	.42	.43	.42	.43
Gall Extract .....lb.	.18	.20	.18	.20	.18	.20
Gambier, com 200 lb bgs ..lb.	...	.08	.04	.08	.03	.07
Singapore cubes, 150 lb bgs .....100 lb.	.08⅛	.09⅛	.05	.09⅛	.05¼	.08
Gelatin, tech, 100 lb cs ...lb.	.50	.55	.45	.55	.45	.50
Glauber's Salt, tech, c-l wks .....100 lb.	1.10	1.30	1.10	1.30	1.00	1.70
Anhydrous, see Sodium Sulfate.						
Glucose (grape sugar) dry 70-80° bgs, c-l, NY ..100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb. bgs .....100 lb.	...	2.33	...	2.33	...	2.33
Glue, bone, com grades, c-l bgs .....lb.	...	.08	.07	.12½	...	...
Better grades, c-l, bgs lb.	.09	.09½	.09½	.16	...	...
Casein, kgs .....lb.	.18	.22	.18	.22	...	...
Hide, high grd, c-l, bgs..lb.	.23	.28	.23	.28	...	...
Med grd, c-l, bgs .....lb.	.19	.23	.19	.23	...	...
Low grd, c-l, bgs .....lb.	.13½	.19	.13½	.19	...	...
Glycerin, CP, 550 lb drs ..lb.	.14	.14½	.11	.14½	.10¼	.11
Dynamite, 100 lb drs ...lb.	.13¾	.14¼	.10	.14¼	.07½	.10¼
Saponification, drs .....lb.	.10	.10½	.06¾	.10½	.05	.08
Soap Lye, drs .....lb.	.09	.09¼	.06¾	.09⅛	.04	.06½

l + 10; *m* + 50.

	Current Market		1934 Low	1934 High	1933 Low	1933 High
Glyceryl Phthalate .....lb.	...	.28	...	.28	...	...
Glyceryl Stearate, bbls....lb.	...	.18	...	.18	.17	.18
Glycol Phthallate .....lb.	...	.28	...	.28	...	...
Glycol Stearate .....lb.	...	.18	.18	.20	...	...
Graphite, Crystalline, 500 lb bbls .....lb.	.04	.05	.04	.05	.04	.05
Flake, 500 lb. bbls .....lb.	.08	.16	.08	.16	.08	.16
Amorphous, bbls .....lb.	.03	.04	.03	.04	.03	.04
GUMS						
Gum Aloes, Barbadoes ....lb.	.87	.90	.85	.90	.85	.90
Animi (Zanzibar) bean & pea, 250 lb cases .....lb.	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases ....lb.	.50	.55	.50	.55	.50	.55
Arabic, amber sorts .....lb.	.09½	.10½	.07¾	.10⅝	.05¾	.08¼
White sorts, No. 1, bgs .....lb.	.21	.22	...	...	...	...
No. 2, bgs .....lb.	.20	.21	...	...	...	...
Powd, bbls .....lb.	.13½	.14½	...	...	...	...
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b., NY .....lb.	.02½	.10½	.02½	.10½	.03	.05
Egyptian, 200 lb cases, f.o.b. NY .....lb.	.12	.15	.12	.15	.13	.15
California, f.o.b. NY, drs .....ton	29.00	55.00	...	...	...	...
Benzoin Sumatra, USP, 120 lb cases .....lb.	.20	.21	.18½	.23	.17	.23
Copal Congo, 112 lb bgs, clean, opaque .....lb.	.24⅛	.24⅝	.24⅛	.28	.16½	.28
Dark, amber .....lb.	.08¾	.09¼	.08⅝	.10½	.06	.10½
Light, amber .....lb.	.14⅜	.14⅞	.14⅜	.19	.08	.19
Copal, East India 180 lb bgs						
Macassar pale bold ....lb.	.09⅞	.10⅜	.09⅞	.10½	.05	.13
Chips .....lb.	.05½	.06	...	...	...	...
Nubs .....lb.	.08½	.09	...	...	...	...
Dust .....lb.	.03¾	.04¼	...	...	...	...
Singapore						
Bold .....lb.	.16½	.17	.16	.17	.05½	.17
Chips .....lb.	.04⅝	.05⅛	...	...	...	...
Nubs .....lb.	.10½	.11	...	...	...	...
Dust .....lb.	.03¾	.04¼	...	...	...	...
Copal Manilla, 180-190 lb baskets, Loba A .....lb.	.11¾	.12¼	.11⅜	.14½	.09	.13½
Loba B .....lb.	.10¼	.10¾	.10¼	.13½	.08	.13
Loba C .....lb.	.10⅛	.11⅜	.09¾	.12	.07	.12
MA sorts .....lb.	.06¾	.07¼	.06½	.07½	.05	.07
DBB .....lb.	.08	.08½	.08	.09½	.05¾	.09½
Dust .....lb.	.04⅞	.05⅜	...	...	...	...
Copal Pontianak, 224 lb cases, bold genuine .....lb.	.16⅛	.16⅝	.16⅛	.19	.14½	.18
Mixed .....lb.	.14	.14½	...	...	...	...
Chips .....lb.	.06⅞	.07⅞	...	...	...	...
Nubs .....lb.	.10¼	.10¾	...	...	...	...
Split .....lb.	.13⅞	.14⅜	...	...	...	...
Dammar Batavia, 136 lb cases						
A .....lb.	.19¾	.20¼	...	...	...	...
B .....lb.	.18¾	.19¼	...	...	...	...
C .....lb.	.16¾	.17¼	...	...	...	...
D .....lb.	.11¾	.12¼	...	...	...	...
A/D .....lb.	.14	.14½	...	...	...	...
A/E .....lb.	.11¾	.12¼	...	...	...	...
E .....lb.	.07	.07½	.07	.09½	.05½	.09½
F .....lb.	.06⅛	.06⅝	.05½	.06⅝	.05½	.06
Singapore						
No. 1 .....lb.	.16½	.17	.15½	.18	.09½	.18
No. 2 .....lb.	.10¾	.11¼	.09⅜	.11	.07	.11½
No. 3 .....lb.	.05⅛	.05⅝	.05⅛	.07	.04½	.07½
Chips .....lb.	.09¼	.09¾	.09	.10¼	...	...
Dust .....lb.	.05¼	.05¾	.05	.06	...	...
Seeds .....lb.	.06⅝	.07¼	.06	.07¾	...	...
Ester .....lb.	.07¼	.08	...	...	...	...
Gamboge, pipe, cases .....lb.	.60	.65	.57	.65	.42	.65
Powdered, bbls .....lb.	.70	.75	.67	.75	.50	.70
Ghatti, sol. bgs .....lb.	.09	.09½	.09	.09½	.06	.09½
Karaya, pow bbls xxx ....lb.	.23	.25	.23	.25	...	...
xx .....lb.	.15	.16	.15	.16	...	...
No. 1 .....lb.	.08	.09	.08	.11	...	...
No. 2 .....lb.	.07	.08	.07	.09	...	...
Kauri, NY, San Francisco, Brown XXX, cases ....lb.	.60	.60½	...	...	...	...
BX .....lb.	.33	.33½	...	...	...	...
B1 .....lb.	.19	.19½	...	...	...	...
B2 .....lb.	.14½	.15	...	...	...	...
B3 .....lb.	.12	.12½	...	...	...	...
Sale XXX .....lb.	.65	.65½	...	...	...	...
No. 1 .....lb.	.40	.40½	...	...	...	...
No. 2 .....lb.	.22	.22½	...	...	...	...
No. 3 .....lb.	.15	.15½	...	...	...	...
Kino, tins .....lb.	.75	.80	.75	.80	...	...
Mastic .....lb.	.46	.46½	.35	.55½	.26⅞	.40
Sandarac, prime quality, 200 lb bgs & 300 lb cks ...lb.	.35	.35½	.35	.50	.21	.50
Senegal, picked bgs .....lb.	.20	.21	17	.21	...	...
Sorts .....lb.	.09⅜	.10	.08	.10	...	...
Thus, bbls .....280 lbs.	...	10.75	9.50	10.75	...	...
Strained .....280 lbs.	...	10.75	9.50	10.75	...	...
Tragacanth, No. 1, cases .....lb.	1.15	1.20	1.00	1.20	.65	1.00
No. 2 .....lb.	1.05	1.10	...	...	...	...
No. 3 .....lb.	.95	1.00	...	...	...	...
No. 4 .....lb.	.85	.90	...	...	...	...
No. 5 .....lb.	.75	.80	...	...	...	...
No. 6, bgs .....lb.	.14	.15	...	...	...	...
Sorts, bgs .....lb.	.11	.12	...	...	...	...
Yacca, bgs .....lb.	.03¼	.03¾	.03¼	.04	...	...

The following

ORGANIC CHEMICALS

ARE AVAILABLE FOR SPOT OR CONTRACT SALE

MICHLER'S KETONE
MIXED-MONONITROCHLORO-BENZENES
MIXED-MONONITROTOLUENES
MIXED-MONONITROXYLENES
MIXED-TOLUIDINES
MIXED-XYLIDINES
MONOBENZYL PARA-AMINOPHENOL
MONOCHLOROBENZENE
MONOETHYLANILINE
MONOETHYL-ORTHO-TOLUIDINE
NEVILE & WINTHER'S ACID
NITROBENZENE
NITROBENZENE-META-SULFONIC ACID
NITRO FILTERS
OIL OF MIRBANE
ORTHO-AMINOPHENOL
ORTHO-ANISIDINE
ORTHO-DICHLOROBENZENE
ORTHO-NITROANISOLE
ORTHO-NITROCHLOROBENZENE
ORTHO-NITROPHENOL
ORTHO-NITROTOLUENE
ORTHO-TOLUIDINE
ORTHO-TOLUIDINE-META-SULFONIC ACID
PARA-AMINOBENZOIC ACID
PARA-AMINOPHENOL (BASE)
PARA-DICHLOROBENZENE
PARA-NITROANILINE-ORTHO-SULFONIC ACID
PARA-NITROBENZOIC ACID
PARA-NITROCHLOROBENZENE
PARA-NITROPHENOL
PARA-NITROTOLUENE
PARA-PHENETIDINE
PARA-TOLUIDINE
PERI ACID
PHENYL-ALPHA-NAPHTHYLAMINE
PHENYL-BETA-NAPHTHYLAMINE
PHENYL GAMMA ACID
PHENYL-METHYL-PYRAZOLENE
PHENYL PERI ACID
PICRAMIC ACID
PICRIC ACID
RESORCINOL, TECHNICAL
R SALT
S ACID
SCHAEFFER SALT
SODIUM METANILATE
SODIUM NAPHTHIONATE
SODIUM PARA-NITROPHENOLATE
SODIUM PICRAMATE
STABILIZERS
SULFANILIC ACID
SULFUR DIOXIDE
THIOCARBANILIDE
TOLIDINE (BASE)
TRIBUTYLAMINE

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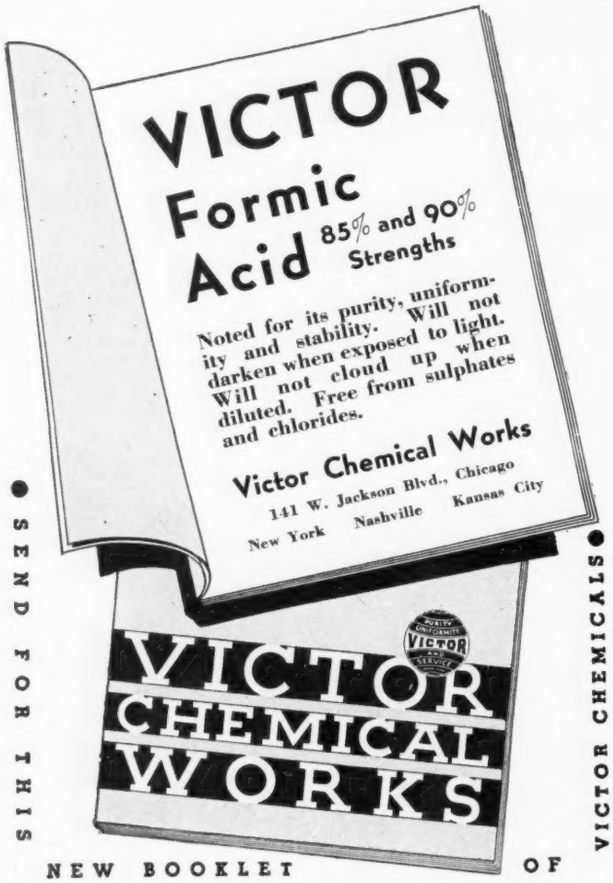
Organic Chemicals Department
Wilmington, Delaware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◆

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Acetate of Soda
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(all grades)
Methyl Acetone
Denatured Alcohol
Formaldehyde
Borax
Phenol U. S. P.
Benzol
Toluol
Xylol
Whiting
Magnesium Carbonate
Magnesium Oxide

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Helium, cyl. (200 cu. ft.) cyl.	... 25.00	25.00	25.00	...	...
Hematite crystals, 400 lb bbls ....lb.	.16 .18	.16	.18	.10	.18
Paste, 500 bbls ....lb.	... .11	...	.11	...	.11
Hemlock 25%, 600 lb bbls wks ....lb.	... .02⅞	.02⅞	.04½	.03½	.04½
tks ....lb.	... .02½	...	...	...	...
Hexalene, 50 gal drs wks..lb.	... .30	...	.30	...	.30
Hexane, normal 60-70°C. Group 3, tks ....gal.	... .14	...	.14	...	...
Hexamethylenetetramine, drs ....lb.	.37 .39	.37	.39	...	...
Hexyl Acetate, delv drs ...lb.	.12 .12½	.12	.12½	...	...
tks ....lb.	... .11½	...	...	...	...
Hoof Meal, f.o.b. Chicago unit	... 2.30	1.85	2.60	.75	1.75
South Amer. to arrive unit	... 1.85	1.65	1.80	1.40	1.75
Hydrogen Peroxide, 100 vol, 140 lb cbys ....lb.	.20 .21	.20	.21	.20	.21
Hydroxyamine Hydrochloride ....lb.	... 3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls lb.	.17 .20	.17	.20	.11	.20
Indigo Madras, bbls ....lb.	1.25 1.30	1.25	1.30	1.25	1.30
20% paste, drs ....lb.	.15 .18	.15	.18	.15	.18
Synthetic, liquid ....lb.	... .12	...	.12	...	.12
Iodine, crude ....per kilo	... 15s 1d	...	15s 1d	...	...
Resublimed, kgs ....lb.	... 1.90	1.90	2.30	2.10	3.40
Irish Moss, ord, bales ....lb.	.09 .10	.07	.10	...	...
Bleached, prime, bales ..lb.	.18 .19	.14	.19	...	...
Iron Acetate Liq. 17°, bbls lb.	.03 .04	.03	.04	...	...
Chloride see Ferric Chloride.					
Nitrate, coml, bbls ..100 lb.	2.75 3.25	2.75	3.25	2.50	3.25
Oxide, English ....lb.	.07½ .08¾	.07½	.09	.04	.07
Isobutyl Carbinol (128-132°C) drs, wks ....lb.	.33 .34	.34	.34	...	.34
tks, wks, frt allowed ..lb.	... .32	.32	.326	...	...
Isopropyl Acetate, tks ....lb.	... .07½	.07	.07½	...	...
drs, frt allowed ....lb.	.08½ .09	...	...	...	...
Ether, see Ether, isopropyl.					
Keiselguhr, 95 lb bgs, NY, Brown ....ton	60.00 70.00	60.00	70.00	60.00	70.00
Lead Acetate, brown, broken, f.o.b. NY, bbls ....lb.	... .09½	.09½	.09½	.09	.10½
White, broken, bbls ....lb.	... .11	.11	.11	...	...
cryst bbls ....lb.	... .10½	.10½	.10½	...	...
gran, bbls ....lb.	... .11	.11	.11	...	...
powd, bbls ....lb.	... .11¼	.11¼	.11¼	...	...
Arsenate, East, jobbers, drs ....lb.	.09 .09½	...	...	...	...
Dealers, drs ....lb.	.09¼ .10½	...	...	...	...
West, jobbers, drs ....lb.	... .09	...	...	...	...
dealers, drs ....lb.	... .10	...	...	...	...
Linoleate, solid bbls ....lb.	.26 .26½	.26	.26½	...	...
Metal, c-l, NY ....100 lb	... 3.70	3.50	4.25	3.00	4.50
Red, dry, 95% Pb_3O_4, delv ....lb.	.062 .07	.06	.07¾	.06½	.08
97% Pb_3O_4, delv ....lb.	.0645 .07¼	...	...	...	...
98% Pb_3O_4, delv ....lb.	.067 .07½	...	...	...	...
Nitrate, 500 lb bbls, wks..lb.	.10 .14	.10	.14	.10	.14
Oleate, bbls ....lb.	.15 .16	.15	.16	.15	.16
Resinate, precip, bbls ...lb.	... .14	.14	.18½	...	...
Stearate, bbls ....lb.	.22 .23	.22	.23	...	...
White, 500 lb bbls, wks..lb.	.06½ .07	.06½	.07	.06	.07
Sulfate, 500 lb bbls, wks lb.	... .06	...	.06	.05½	.06
Lime, chemical quicklime, f.o.b., wks, bulk ....ton	7.00 7.25	...	...	...	...
Hydrated, f.o.b., wks ..ton	8.50 12.00	...	...	...	...
Lime Salts, see Calcium Salts.					
Lime sulfur, sol, jobbers, tks ....gal.	... .10	...	...	...	...
drs ....gal.	.13½ .15½	...	...	...	...
Dealers, tks ....gal.	... .10½	...	...	...	...
drs ....gal.	.14 .16½	...	...	...	...
Linseed cake, bgs ....ton	... 37.50	21.50	37.50	...	...
Linseed Meal, bgs ....ton	... 40.00	30.50	41.00	28.00	37.00
Litharge, coml, delv, bbls..lb.	.052 .06	.051	.06¾	.05	.07
Lithopone, dom, ordinary, delv, bgs ....lb.	.04½ .04¾	.04½	.04¾	...	...
bbls ....lb.	.04¾ .05	.04¾	.05	...	...
High strength, bgs ....lb.	.06 .06¼	.06	.06¼	...	...
bbls ....lb.	.06¼ .06½	.06¼	.06½	...	...
Titanated, bgs ....lb.	.06 .06¼	.06	.06¼	...	...
bbls ....lb.	.06¼ .06½	.06¼	.06½	...	...
Logwood, 51°, 600 lb bbls lb.	.08½ .10½	.08½	.12½	.05	.12½
Solid, 50 lb boxes ....lb.	.13½ .17½	.13½	.17½	.08	.17½
Sticks ....ton	24.00 26.00	24.00	26.00	24.00	26.00
Madder, Dutch ....lb.	.22 .25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl ton	60.00 65.00	55.00	65.00	46.00	65.00
Magnesium Carb, tech, 70 lb bgs, wks ....lb.	.06 .06½	.06	.06½	.05¾	.06½
Chloride flake, 375 lb drs, c-l, wks ....ton	36.00 39.00	34.00	39.00	34.00	36.00
Magnesium fluosilicate, crys, 400 lb bbls, wks .... lb.	.10 .10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb. bbls ....lb.	... .42	...	.42	...	.42
Heavy, 250 lb bbls ...lb.	... .50	...	.50	...	.50
Palmitate, bbls ....lb.	.22 .23	.21	.23	...	...
Stearate, bbls ....lb.	.19 .22	...	...	...	...
Linoleate, lig drs ....lb.	.18 .19	.18	.19	...	...
Resinate, fused, bbls ...lb.	.08¼ .08½	.08¼	.08½	...	...
precip, bbls ....lb.	... .12	.11½	.12½	...	...
Manganese Borate, 30%, 200 lb bbls ....lb.	.15 .16	.15	.16	.15	.16
Chloride, 600 lb cks ....lb.	.09 .12	.07	.12	.07	.08
Dioxide, tech (peroxide), drs ....lb.	.03¾ .06	.03¾	.06	.03½	.06
Mangrove 55%, 400 lb bbls lb.	... .04	...	.04	...	.04
Bark, African ....ton	30.00	26.00	32.00	22.00	31.00
Marble Flour, blk ....ton	12.00 13.00	12.00	13.00	12.00	13.00
Mercuric chloride ....lb.	.73 .93	.73	.93	.67	.87

Current

Mercury Orthodichlorobenzene

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Mercury metal ...76 lb. flasks	...	73.50	66.50	79.00	48.00	69.00
Meta-nitro-aniline .....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls .....lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb bbls .....lb.	.80	.84	.80	.84	.80	.84
Peroxide, 100 lb cs ....lb.	1.20	1.25	1.20	1.25	1.00	1.25
Silicofluoride, bbls .....lb.	.09	.10	.09	.11	.08¾	.11
Stearate, bbls .....lb.	.19	.20	.19	.20	.16½	.20
Meta-toluene-diamine, 300 lb bbls .....lb.	.67	.69	.67	.69	.67	.69
Methanol, 95%, frt allowed, drs .....gal. *o*	.37½	.58	.37½	.58	...	...
tks, frt allowed ....gal. *o*	.33	.36½	.33	.36½	...	...
97% frt allowed, drs gal. *o*	.38½	.59	.38½	.59	...	...
tks, frt allowed ....gal. *o*	.34	.37½	.34	.37½	...	...
Pure, frt allowed, drs gal. *o*	.40	.61	.40	.61	...	...
tks, frt allowed ....gal. *o*	.35½	.39	.35½	.39	...	...
Synthetic, frt allowed, drs .....gal. *o*	.40	.61	.40	.61	...	...
tks, frt allowed ....gal. *o*	.35½	.39	.35½	.39	...	...
Methyl Acetate, dom, 98-100%, drs .....lb.	.18	.18½	.18	.18½	...	...
Synthetic, 410 lb drs .. lb.	.16	.17	.16	.17	...	...
tks .....lb.	...	.15	.15	.15	...	...
Acetone, frt allowed, drs .....gal. *p*	.53½	.73½	...	...	...	...
tks, frt allowed, drs gal. *p*	.49	.52½	...	...	...	...
Synthetic, frt allowed, east of Rocky M., drs gal. *p*	.57½	.60	.57½	.60	...	...
tks, frt allowed	...	.53	...	...	...	...
West of Rocky M., frt allowed, drs ....gal. *p*	.60	.63	...	...	...	...
tks, frt allowed ..gal. *p*	...	.56	...	...	...	...
Hexyl Ketone, pure, drs lb.	...	.60	.60	1.20	...	1.20
Anthraquinone .....lb.	.65	.67	.65	.67	.65	.67
Butyl Ketone, tks .....lb.	...	.10½	.10½	.10½	...	...
Chloride, 90 lb cyl .....lb.	...	.45	.45	.45	.45	.45
Ethyl Ketone, tks .....lb.	...	.07½	.07½	.07½	...	...
Propyl carbinol, drs ...lb.	.60	.75	.60	.75	...	...
Mica, dry grd, bgs, wks ..lb.	35.00	...	...	...	...	...
Michler's Ketone, kgs ....lb.	...	2.50	...	2.50	2.50	3.00
Molasses, blackstrap, tks, f.o.b. NY .....gal.	.06	.06⅛	.06	.09	.04½	.07
Monoamylamine, drs, wks lb.	...	1.00	...	1.00	...	...
Monochlorobenzene, see Chlorobenzene, mono.						
Monomethylparaminosulfate, 100 lb drs .....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Myrobalans 25%, liq bbls..lb.	...	.04¼	.03¾	.04¼	.03¼	.04¼
50% Solid, 50 lb boxes lb.	.06	.06¼	.06	.06¼	.05	.06¼
J1 bgs .....ton	...	25.50	24.50	32.00	27.00	35.00
J2 bgs .....ton	15.50	15.75	15.75	18.00	15.00	22.00
R2 bgs .....ton	16.00	16.50	16.25	18.00	15.00	22.00
Naphtha. v.m. & p. (deodorized) see petroleum solvents.						
Naphthalene, dom, crude, bgs, wks .....lb.	1.65	2.40	...	...	...	...
Imported, cif, bgs ....lb.	...	1.90	1.75	1.90	1.75	2.15
Dyestuffs, bgs, bbls, Eastern wks .....lb.	.04¼	.04¾	...	...	...	...
Balls, ref'd, bbls, Eastern wks .....lb.	.04½	.05¼	...	...	...	...
Flakes, ref'd, bbls, Eastern wks .....lb.	.04½	.05¼	...	...	...	...
Dyestuffs, bgs, bbls, Mid-West wks .....lb. *q*	.04¾	.05¼	...	...	...	...
Balls, ref'd, bbls, Mid-West wks .....lb. *q*	.05	.05¾	...	...	...	...
Flakes, ref'd, bbls, Mid-West wks .....lb. *q*	.05	.05¾	...	...	...	...
Nickel Chloride, bbls .....lb.	.18	.19	.18	.19	.17	.19
Oxide, 100 lb kgs, NY..lb.	.35	.37	.35	.37	.35	.37
Salt, 400 lb bbls, NY ...lb.	.12½	.13	.11½	.13	.11	.13
Single, 400 lb bbls, NY lb.	.11½	.12	.11½	.12	.11	.12
Metal ingot .....lb.	...	.35	.35	.35	.35	.35
Nicotine, free 50%, 8 lb tins, cases	8.25	10.15	8.25	10.15	...	...
Sulfate, 55 lb drs .....lb.	.67	.75	.67	.75	.67	.75
Nitre Cake, blk .....ton	12.00	14.00	12.00	14.00	10.00	14.00
Nitrobenzene, redistilled, 1000 lb drs, wks .....lb.	.09	.11	.09	.11	.08½	.11
tks .....lb.	...	.08½	...	.08½	...	...
Nitrocellulose, c-l-l cl, wks lb.	.27	.34	.27	.34	.27	.33
Nitrogenous Mat'l, bgs, imp .....unit	2.65	2.75	...	...	...	...
dom, Eastern wks ....unit	...	Nom.	2.35	3.25	1.50	3.50
dom, Western wks ....unit	...	2.30	...	...	...	...
Nitronaphthalene, 550 lb bbls .....lb.	.24	.25	.24	.25	.24	.25
Nutgalls Aleppy, bgs .....lb.	.19	.20	.18	.20	...	.18
Chinese, bgs .....lb.	.19	.20	.17	.20	.17	.18
Oak Bark Extract, 25%, bbls lb.	...	.03½	.03⅜	.03½	...	...
tks .....lb.	...	.02¾	...	...	...	...
Orange-Mineral, 1100 lb cks NY .....lb.	.09¼	.10	.09¼	.10½	.09½	.10¾
Orthoaminophenol, 50 lb kgs. lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	.82	.84	.82	1.15	1.00	1.15
Orthochlorophenol, drs ....lb.	.50	.65	.50	.65	.50	.65
Orthocresol, drs .....lb.	.13	.15	.13	.15	.13	.15
Orthodichlorobenzene, 1000 lb drs .....lb.	.05½	.06	.05½	.06	.05½	.06

o Country is divided in 5 zones, prices varying by zone. In drum prices range covers both zone and c-l and lcl quantities in the 5 zones; in each case, bbl. prices are 2½c higher; synthetic is not shipped in bbls.; *p* Country is divided into 5 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila. or N. Y.

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K414

THE KESSLER CHEMICAL CORPORATION

11th Ave. & 26th St. B. & O. Bldg. New York, N. Y.

Subsidiary of the
AMERICAN COMMERCIAL ALCOHOL CORPORATION

COPPERAS

(*Iron Sulphate*)

Granular and Crystals

•

E. M. SERGEANT PULP AND CHEMICAL CO. INC.

Empire State Bldg. New York City

COLLOIDINE

CORRECTS AND RE-EMULSIFIES
"BROKEN" EMULSIONS

Colloidine A and B.
A. For Industrial Emulsions.
B. For Cosmetic Emulsions.

Prices f. o. b. Boston

1 lb. .52 8 lbs. .37 lb. 50 lbs. .32 400 lbs. .27 lb.

THE BEACON COMPANY

MALDEN MASS.

Makers of Ammonium, Sodium Potassium and Triethanolamine Soaps

Orthonitrochlorobenzene
Phloroglucinol

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Orthonitrochlorobenzene, 1200 lb drs, wks ..... lb.	.28	.28	.29	.28	.29
Orthonitrotoluene, 1000 lb drs, wks ..... lb.	.05½	.05½	.06	.05½	.06
Orthonitrophenol, 350 lb drs ..... lb.	.52	.52	.80	.52	.90
Orthotoluidine, 350 lb bbls, l-c-l ..... lb.	.14½	.14	.15	.14	.22
Orthonitroparachlorphenol, tins ..... lb.	.70	.70	.75	.70	.75
Osage Orange, cryst ..... lb.	.17	.16	.25	.16	.17
51 deg liquid ..... lb.	.07	.07	.07¾	.06	.07¾
Powd, 100 lb bgs ..... lb.	.14½	.14½	.15	.14½	.15
Paraffin, refd, 200 lb cs slabs					
122-127 deg M P ..... lb.	.04	.04½	.04¾	.02	.04½
128-132 deg M P ..... lb.	.05	.04¾	.0515	.03⅛	.04¾
133-137 deg M P ..... lb.	.0575	.05	.06	.043	.05¾
Para aldehyde, 110-55 gal drs ..... lb.	.16	.16	.18	.16	.18
Aminoacetanilid, 100 lb kgs ..... lb.	...	.52	.85	.52	.60
Aminohydrochloride, 100 lb kgs ..... lb.	1.25	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	.78	1.05	.78	.80
Chlorophenol, drs ..... lb.	.50	.50	.65	.50	.65
Coumarone, 330 lb drs .. lb.	...	...	...	...	...
Cymene, refd, 110 gal dr ..... gal.	2.25	2.25	2.50	2.25	2.50
Dichlorobenzene 150 lb bbls wks ..... lb.	.16	.16	.20	.15	.18
Nitroacetanilid, 300 lb bbls ..... lb.	.45	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wks ..... lb.	.48	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs, wks ..... lb.	.23½	.23½	.24	.23½	.26
Nitro-orthotoluidine, 300 lb bbls ..... lb.	2.75	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	.45	.45	.50	.45	.50
Nitrosodimethylaniline, 120 lb bbls ..... lb.	.92	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	.35	.35	.37	.29	.37
Phenylenedamine, 350 lb bbls ..... lb.	1.25	1.25	1.30	1.15	1.30
Para Tertiary amyl phenol, wks, drs ..... lb.	.32	.32	.50	...	...
Toluenesulfonamide, 175 lb bbls ..... lb.	.70	.70	.75	.70	.75
tks, wks ..... lbs.	...	...	.31	...	...
Toluenesulfonchloride, 410 lb bbls, wks ..... lb.	.20	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks ..... lb.	.56	.56	.60	.56	.60
Paris Green, Arsenic Basis					
100 lb kgs ..... lb.	...	.23	.24	...	.24
250 lb kgs ..... lb.	...	...	.22	...	.23
Perchlorethylene, 50 gal drs ..... lb.	...	.15	...	.15	...
Persian Berry Ext, bbls .. lb.	.55	Nom.	.55	Nom.	.25 Nom.
Pentane, normal, 28-38°C,					
group 3 tks ..... gal.	...	.09	.09	.09	...
drs, group 3 ..... gal.	.10	.15	...	...	...
Petrolatum, dark amber, bbls ..... lb.	.02⅜	.02⅞	...	...	...
Light, bbls ..... lb.	.02⅞	.03⅛	...	...	...
Medium, bbls ..... lb.	.02¾	.03	...	...	...
Dark green, bbls ..... lb.	.02½	.02¾	...	...	...
White, lily, bbls ..... lb.	.06⅜	.06½	...	...	...
White, snow, bbls ..... lb.	.07⅜	.07½	...	...	...
Red, bbls ..... lb.	.02½	.02¾	...	...	...
Petroleum Ether, 30-60°,					
group 3, tks ..... gal.	...	.13	.11	.13	...
drs, group 3 ..... gal.	.15	.16	.15	.17	...

PETROLEUM SOLVENTS AND DILUENTS

Cleaners naphthas, group 3, tks, wks ..... gal.	...	.06⅞	...	...	...
Bayonne, tks, wks .. gal.	...	.09	...	...	...
West Coast, tks .... gal.	...	.15	...	...	...
Hydrogenated naphthas, frt allowed East, tks ... gal.	...	.17½	...	...	...
No. 2, tks ..... gal.	...	.22½	...	...	...
No. 3, tks ..... gal.	...	.17½	...	...	...
No. 4, tks ..... gal.	...	.22½	...	...	...
Lacquer diluents, tks, Bayonne ..... gal.	.12	.12½	.12	.12½	...
Group 3, tks ..... gal.	...	.07⅞	.06⅞	.08⅜	.06¼ .08⅛
Naphtha, V.M.P., East, tks, wks ..... gal.	...	.09	.09	.09½	.08½ .09½
Group 3, tks, wks .. gal.	...	.06⅞	.06¼	.07¼	... ...
Petroleum thinner, East, tks, wks ..... gal.	...	.09	.09	.09	... ...
Group 3, tks, wks ...gal.	...	.05⅞	.05⅞	.06⅜	... ...
Rubber Solvents, stand grd, East, tks, wks ..... gal.	...	.09	.09	.09½	.09 .09½
Group 3, tks, wks ..gal.	...	.06⅞	.06⅜	.06⅞	.05 .06⅞
Stoddard Solvent, East, tks, wks ..... gal.	...	.09	.09	.09½	.09 .09½
Group 3, tks, wks ..gal.	...	.06⅜	.05¾	.07⅛	.04½ .06⅝
Phenol, 250-100 lb drs ....lb.	.14¼	.15	.14¼	.15	.14¼ .15
Phenyl-Alpha-Naphthylamine, 100 lb kgs ..... lb.	...	1.35	...	1.35	... 1.35
Phenyl Chloride, drs ..... lb.	...	.16	...	.16	... ...
Phenylhydrazine Hydrochloride ..... lb.	2.90	3.00	2.90	3.00	2.90 3.00
Phloroglucinol, tech, tins ..lb.	15.00	16.50	15.00	16.50	... ...
CP, tins ..... lb.	20.00	22.00	20.00	22.00	... ...

Current

Phosphate Rock
Rosin Oil

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Phosphate Rock, f.o.b. mines					
Florida Pebble, 68% basis ton	...	3.25	2.85	3.25	2.75	3.25
70% basis ton	...	3.90	3.35	3.90	3.25	3.90
72% basis ton	...	4.40	3.85	4.40	3.75	4.35
75-74% basis ton	...	5.40	4.90	5.40	4.75	5.50
75% basis ton	...	5.50	5.05	5.50	4.85	5.75
77-80% basis ton	...	6.50	5.90	6.50	5.75	6.30
Tennessee, 72% basis ton	...	4.75	4.75	5.00	..	5.00
Phosphorous Oxychloride 175 lb cyl lb.	.16	.20	.16	.20	.16	.23
Red, 110 lb cases lb.	.44	.45	.44	.45	.40	.45
Yellow, 110 lb cs, wks lb.	.28	.33	.28	.33	.27½	.33
Sesquisulfide, 100 lb cs lb.	.38	.44	.38	.44	.38	.44
Trichloride, cyl lb.	.16	.20	.16	.20	.16	.23
Phthalic Anhydride, 100 lb drs, wks lb.	.14½	.15½	.14½	.15½	.13½	.16
Pine Oil, 55 gal drs or bbls						
Destructive dist lb.	.48	.50	.48	.62	.59	.62
Steam dist wat wh bbls gal.	.64	.65	.64	.65	...	...
tks gal.	...	.59	...	...	...	...
Straw color, bbls gal.	...	.59	...	...	...	...
tks gal.	...	.54	...	...	...	...
Pitch Hardwood, wks ton	...	20.00	...	20.00	20.00	25.00
Burgundy, dom, bbls, wks lb.	...	.03½	...	...	...	...
Imported lb.	.11	.13	..	...	...	...
Coaltar, bbls, wks ton	...	19.00	..	...	..	..
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls bbl.	3.75	4.25	...	...	...	...
Stearin, drs lb.	.03	.04½	...	...	...	...
Platinum, refd oz.	35.00	36.00	35.00	38.00	24.00	38.00

POTASH

Potash, Caustic, wks, sol lb.	.06¼	.06½	.06¼	.07⅜	.06⅛	.07⅜
flake lb.	.07	.07⅜	.07	.08¼	.0705	.08¼
Liquid tks lb.	...	.02⅞	.02⅞	.03⅝	...	...
Potash Salts, Rough Kainit 14% basis ton	...	8.50	8.50	9.70	...	9.70
Manure Salts, imported						
20% basis, blk ton	...	8.60	8.60	12.00	...	12.00
30% basis, blk ton	...	12.90	12.90	19.15	...	19.15
Domestic, cif ports, blk unit	...	.43	...	...	...	...
Potassium Acetate lb.	.26	.28	.26	.28	.27	.28
Potassium Muriate, 80% basis bgs ton	...	22.00	22.00	37.15	...	37.15
Dom, blk unit	...	.40	...	...	...	...
Pot & Mag Sulfate, 48% basis bgs ton	...	22.50	22.50	25.00	25.00	27.80
Potassium Sulfate, 90% basis bgs ton	...	35.00	35.00	42.15	42.15	47.50
Potassium Bicarbonate, USP 320 lb bbls lb.	.07½	.09	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb cks lb.	.08⅛	.08⅝	.08⅛	.08⅝	.07¼	.08⅝
Binoxalate, 300 lb bbls lb.	.22	.23	.14	.23	.14	.17
Bisulfate, 100 lb kgs lb.	.35	.36	.33	.36	.16	.30
Carbonate, 80-85% calc 800 lb cks lb.	.07½	.07⅞	.07	.07⅞	.04⅞	.07½
liquid, tks lb.	...	...	...	...	...	...
drs, wks lb.	...	...	...	...	...	...
Chlorate crys, powd, 112 lb kgs, wks lb.	...	.09¾	.08½	.09¾	.08	.09
gran, kgs lb.	.12	.13	...	...	...	...
powd, kgs lb.	.08¾	.09¾	...	...	...	...
Chloride, crys, bbls lb.	.04	.04¾	.04	.04¾	.04	.04¾
Chromate, kgs lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb cases lb.	.55	.57½	.55	.60	.50	.60
Iodide, 75 lb bbls lb.	...	1.40	1.40	2.70	2.35	2.70
Metabisulfite, 300 lb bbls lb.	...	.15	.10½	.15	.10½	.11
Oxalate, bbls lb.	.16	.24	.16	.24	.16	.24
Perchlorate, cks, wks lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys, 500 & 1000 lb drs, wks lb.	.18½	.19½	.18½	.19½	.17½	.19½
Prussiate, red, 112 lb kgs lb.	.35	.38½	.35	.39	.39	.41
Yellow, 500 lb casks lb.	.18	.19	.18	.19	.16½	.19
Tartrate Neut, 100 lb kgs lb.	...	.21	...	.21	...	.21
Titanium Oxalate, 200 lb bbls lb.	.32	.35	.32	.35	...	...
Propane, group 3, tks	...	.07	...	.07	...	.07
Pumice Stone, lump bgs lb.	.04½	.06	.04½	.06	.04	.06
250 lb bbls lb.	.05	.07	.05	.07	.04½	.07
Powd, 350 lb bgs lb.	.02½	.03	.02½	.03	.02½	.03
Putty, coml, tubs 100 lb.	...	2.75	2.25	2.75	2.00	2.25
Linseed Oil, kgs 100 lb.	...	4.50	4.00	4.50	3.40	4.50
Pyridine, 50 gal drs gal.	...	1.25	...	1.25	.85	1.25
Pyrites, Spanish cif Atlantic ports, blk unit	.12	.13	.12	.13	.12	.13
Pyrocatechin, CP, drs, tins lb.	2.75	3.00	2.75	3.00	...	...
Quebracho, 35% liq tks lb.	...	.02⅝	.02¼	.02⅝	.02	.02⅜
450 lb bbls, c-l lb.	...	.03⅛	.02¾	.03⅛	.02⅜	.02⅞
Solid, 63%, 100 lb bales cif lb.	...	.03⅝	.02⅞	.03⅝	.02⅜	.03⅜
Clarified, 64%, bales lb.	...	.03⅞	.03	.03⅞	.02⅜	.03½
Quercitron, 51 deg liq, 450 lb bbls lb.	.06	.06½	.05½	.06½	.05½	.06
Solid, 100 lb boxes lb.	.10	.12	.09½	.13	.09½	.13
R Salt, 250 lb bbls, wks lb.	.44	.45	.40	.45	.40	.44
Resorcinol tech, cans lb.	.75	.80	.65	.80	.65	.70
Rochelle Salt, cryst lb.	.14½	.15	.12½	.16	...	...
Powd, bbls lb.	...	.13½	...	...	...	...
Rosin Oil, bbls, first run gal.	...	.45	.45	.48	.42	.46
Second run gal.	...	.48	.48	.53	.46	.51
Third run, drs gal.	.55	.60	...	...	...	...

SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.

MURIATE OF POTASH
50% and 62½% K_2O
MANURE SALTS
25% — 30% K_2O

UNITED STATES POTASH COMPANY, INC.
342 Madison Avenue, New York, N. Y.

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C. P. Crystals
and
Resublimed Crystals

RESORCIN AND PHLOROGLUCINOL
(Technical—C. P.)
PENNSYLVANIA COAL PRODUCTS CO.
Established 1916
Petrolia Pennsylvania

STEARATES
ZINC STEARATE
CALCIUM STEARATE
ALUMINUM STEARATE
MAGNESIUM STEARATE
Stocks carried also at Chicago, St. Louis, San Francisco, Los Angeles, Kansas City, New Orleans, Des Moines
FRANKS CHEMICAL PRODUCTS CO.
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99½% Pure

for

Sulphuric Acid

Fertilizer Manufacture

Sulphite Pulp

Explosives

Insecticides

Carbon Bi-Sulphide

Miscellaneous Chemicals

◆

Your business is solicited whether of carload or cargo quantities

◆

TEXAS GULF SULPHUR CO.

75 E. 45th Street New York City

Mines: Gulf, Newgulf and Long Point, Texas

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Rosins 600 lb bbls, 280 lb unit ex. yard NY:					
B	...	5.25	4.50	5.75	2.75	5.15
D	...	5.25	4.60	5.85	2.95	5.15
E	...	5.25	4.80	6.50	3.55	5.15
F	...	5.35	5.00	6.75	3.85	5.17½
G	...	5.45	5.05	6.75	3.90	5.17½
H	...	5.50	5.10	6.75	4.00	5.17½
I	...	5.55	5.15	6.75	4.05	5.20
K	...	5.65	5.30	6.75	4.60	5.20
M	...	5.65	5.45	6.80	4.35	5.25
N	...	5.75	5.50	6.80	4.75	5.40
WG	...	6.05	5.70	6.80	4.80	5.60
WW	...	6.40	5.90	6.85	4.85	6.20
Rosins, Gum, Savannah (280 lb unit):						
B	...	3.80	...	...	...	...
D	...	4.00	...	...	...	...
E	...	4.05	...	...	...	...
F	...	4.15	...	...	...	...
G	...	4.25	...	...	...	...
H	...	4.30	...	...	...	...
I	...	4.35	...	...	...	...
K	...	4.45	...	...	...	...
M	...	4.45	...	...	...	...
N	...	4.50	...	...	...	...
WG	...	4.80	...	...	...	...
WW	...	5.25	...	...	...	...
X	...	5.25	...	...	...	...
Rosins, Wood, wks (280 lb unit), FF	4.30	5.25	...	...	...	...
I	4.65	5.50	...	...	...	...
M	5.00	5.75	...	...	...	...
N	5.40	6.05	...	...	...	...
Rosin, Wood. c-l, FF grade, NY	...	5.10	5.10	6.13	...	...
Rotten Stone, bgs mines ..ton	23.50	24.00	23.50	24.00	23.50	24.00
Lump, imported, bbls ..lb.	.05	.07	.05	.07	.05	.07
Selected, bbls .....lb.	.08	.10	.08	.12	.09	.12
Powdered, bbls .....lb.	.02½	.05	.02½	.05	.02	.05
Sago Flour, 150 lb bgs ....lb.	.02¾	.03¾	.02½	.03¾	.02½	.03
Sal Soda, bbls, wks ..100 lb.	...	1.30	1.10	1.30	.90	1.10
Salt Cake, 94-96%, c-l, wks .....ton	13.00	18.00	13.00	18.00	13.00	18.00
Chrome, c-l, wks .....ton	12.00	13.00	12.00	13.00	12.00	13.00
Saltpetre, double refd, gran, 450-500 lb bbls .....lb.	.059	.06¼	.059	.06¼	.05¾	.06¾
Powd, bbls .....lb.	.069	.07⅞	...	...	...	...
Cryst, bbls .....lb.	.069	.08	...	...	...	...
Satin, White, 550 lb bbls ..lb.	...	.01½	...	.01½	...	.01½
Shellac, Bone dry, bbls ..lb. *r*	.30	.32	.26	.37	.18	.28
Garnet, bgs .....lb.	.26	.27	.26	.32	.15	.20
Superfine, bgs .....lb. *s*	.26	.28	.23	.31	.09½	.18¾
T. N., bgs .....lb. *s*	.23	.25	...	...	...	...
Schaeffer's Salt, kgs .....lb.	.48	.50	.48	.50	.48	.50
Silver Nitrate, vials .....oz.		.38	.31⅞	.40½	...	...
Slate Flour, bgs, wks ....ton	9.00	10.00	9.00	10.00	...	...
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.25	...	1.25	1.17½	1.25
58% light, bgs .....100 lb.	...	1.23	...	1.25	1.17½	1.23
blk .....100 lb.	...	1.05	...	1.05	...	1.05
paper bgs .....100 lb.	...	1.20	...	1.20	...	1.20
bbls .....100 lb.	...	1.50	...	1.50	...	1.50
Soda Caustic, 76% grnd & flake, drs .....100 lb.	...	3.00	...	3.00	2.90	3.00
76% solid, drs .....100 lb.	...	2.60	...	2.60	2.50	2.60
Liquid sellers, tks, 100 lbs.	...	2.25	...	2.25	2.15	2.25
Sodium Abietate, drs .....lb.	...	.08	.03	.08	...	.03
Acetate, tech, 450 lb bbls, wks .....lb.	.04½	.05	.04½	.05	.04¼	.05
Alignate, drs .....lb.	...	.64	.50	.64	...	.50
Arsenate, drs .....lb.	...	.10½	.07¾	.10½	.07¾	.08¾
Arsenite, liq, drs .....gal.	.40	.75	.40	.75	.05	.75
Benzoate, USP, kgs ... lb.	.46	.48	.45	.48	...	...
Bicarb, 400 lb bbl, wks. 100 lb.	...	1.85	1.85	1.85	1.85	1.85
Bichromate, 500 lb cks, wks .....lb.	.06⅛	.06⅝	.06⅛	.06⅝	.044	.07
Bisulfite, 500 lb bbl, wks lb.	.03¼	.036	.03	.036	.02¾	.0335
35-40% sol cbys, wks 100 lb.	1.95	2.10	...	...	...	...
Chlorate, bgs, wks .....lb.	.06¼	.07½	.06¼	.07½	.05¾	.07¾
Chloride, tech .....ton	13.60	16.50	11.40	16.50	11.40	14.00
Cyanide, 96-98%, 100 & 250 lb drs, wks .....lb.	.15½	.17½	.15½	.17½	.15½	.16
Fluoride, 90%, 300 lb bbls, wks .....lb.	.07¼	.08¼	.07¼	.09½	.07	.07½
Hydrosulfite, 200 lb bbls, f.o.b. wks .....lb.	.19½	.21	.19½	.21	.20	.21
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	2.50	3.00	2.40	3.00	2.40	3.00
Tech, reg cryst, 375 lb bbls, wks .....100 lb.	2.40	2.75	2.40	2.75	2.40	2.65
Iodide .....lb.	...	2.40	2.40	3.50	3.10	3.50
Metanilate, 150 lb bbls ..lb.	.41	.42	.41	.42	.44	.45
Metasilicate, gran, c-l, wks .....100 lb.	2.65	3.05	2.65	3.05	2.65	3.25
cryst, bbls, wks ..100 lb.	...	3.25	...	3.25	...	3.25
Monohydrate, bbls .....lb.	...	.02½	...	.02½	...	.02½
Napthenate, drs ..... lb.	...	.09	.09	.13	...	...
Naphthionate, 300 lb bbl lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb bgs, c-l, NY .....ton	...	24.80	24.80	26.30	1.26*x*	1.31½*x*
100 lb bgs .....ton	...	25.50	25.50	27.00	...	...
Bulk .....ton	...	23.50	23.50	24.50	...	...

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 3c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; *s* T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y.

	Current Market		1934 Low	1934 High	1933 Low	1933 High
Sodium (continued)						
Nitrite, 500 lb bbls ....lb.	.07¼	.08	.07¼	.08	.07¼	.08
Orthochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls ..lb.	.18	.19	.18	.19	.17	.19
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	...
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	...	2.20	2.10	2.40	2.00	2.40
bgs, wks .....100 lb.	...	2.00	...	...	...	...
tri-sodium, tech, 325 lb bbls, wks .....100 lb.	...	2.60	2.60	2.70	2.15	2.50
bgs, wks .....100 lb.	...	2.60	...	...	...	...
Picramate, 160 lb kgs ..lb.	.67	.69	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl, wks .....lb.	.11½	.12	.11½	.12	.11½	.12
Pyrophosphate, anhyd, 100 lb bbls .....lb.	...	.15	...	.15	...	...
Silicate, 60°, 55 gal drs, wks .....100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40°, 35 gal drs, wks 100 lb.	...	.80	...	.80	.75	.80
tks, wks .....100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY .....lb.	.04¾	.05	.04¾	.06	.04½	.06
Stannate, 100 lb drs ....lb.	.34	.37	.33½	.37½	.18	.37
Stearate, bbls .....lb.	.20	.25	.20	.25	.20	.25
Sulfanilate, 400 lb bbls..lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-l, wks .....100 lb. †	2.35	2.85	2.20	2.85	2.00	2.85
Sulfide, 80% cryst, 440 lb bbls, wks .....lb.	...	.02¼	.02¼	.02½	.02½	.02¾
62% solid, 650 lb drs, c-l, wks .....lb.	...	.03	...	.03	...	.03
Sulfite, cryst, 400 lb bbls, wks .....lb.	.023	.02½	.02¼	.02½	.03	.03¼
Sulfocyanide, bbls .....lb.	.32	.42½	.28	.42½	.28	.35
Tungstate, tech, crys, kgs .....lb.	...	.90	.70	.90	.57	.67
Spruce Extract, ord, tks ..lb.	...	.01	...	.01	.00⅞	.01
Ordinary, bbls .....lb.	...	.01½	...	.01½	.01¼	.01½
Super spruce ext, tks ...lb.	...	.01⅝	...	.01⅜	.01¼	.01⅝
Super spruce ext, bbls ..lb.	...	.01⅞	...	.01⅞	.01⅝	.01⅞
Super spruce ext, powd, bgs .....lb.	...	.04	...	.04	...	.04
Starch, Pearl, 140 lb bgs .....100 lb.	3.46	3.56	2.81	3.76	2.29	3.01
Powd, 140 lb bgs ...100 lb.	3.56	3.66	2.71	3.66	2.19	2.91
Potato, 200 lb bgs .....lb.	.05¼	.06	.05¼	.06	.03¾	.06
Imp, bgs .....lb.	.06	.06½	.06	.06½	.04¾	.06½
Rice, 200 lb bbls .....lb.	.07½	.08½	.07½	.08½	.07	.08½
Wheat, thick bgs .....lb.	...	.08¼	.06¼	.08¼	.05¾	.06¾
Strontium carbonate, 600 lb. bbls, wks .....lb.	.07¼	.07½	.07¼	.07½	.07¼	.07½
Nitrate, 600 lb bbls, NY .....lb.	.08¾	.09½	.08¾	.11	.07	.11
Sulfur	...	...	...	...	...	...
Crude, f.o.b. mines ....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour, coml, bgs ....100 lb.	1.60	2.35	1.60	2.35	1.60	2.35
bbls .....100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs ..100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls .....100 lb.	2.55	3.15	2.55	3.15	2.55	3.15
Extra fine, bgs .....100 lb.	2.40	3.00	2.40	3.00	2.40	3.00
Superfine, bgs .....100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls .....100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs .....100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls .....100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs .....100 lb.	2.35	3.10	2.35	3.10	2.35	3.10
bbls .....100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, red, 700 lb drs, wks .....lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs, wks lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl lb.	.08½	.10	.07	.10	.07	.08
Multiple units, wks ... lb.	...	.06½	...	...	...	...
tks, wks .....lb.	...	.04¾	...	...	...	...
Refrigeration, cyl, wks ...lb.	...	.13	...	...	...	...
Multiple units, wks ....lb.	...	.09¼	...	...	...	...
Sulfuryl Chloride .....lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd .....ton	...	60.00	58.00	75.00	50.00	75.00
dom, bgs, wks .....ton	...	35.00	...	...	...	...
Superphosphate, 16% bulk, wks .....ton	...	8.50	8.00	8.50	6.50	8.00
Run of pile .....ton	...	8.00	7.50	8.00	6.00	7.50
Talc, Crude, 100 lb bgs, NY .....ton	14.00	15.00	12.00	15.00	12.00	15.00
Refd, 100 lb bgs, NY ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bgs, NY ton	22.00	30.00	27.50	30.00	18.00	30.00
Refd, white, bgs .....ton	45.00	60.00	45.00	60.00	35.00	60.00
Italian, 220 lb bgs to arr ton	70.00	75.00	70.00	75.00	48.50	75.00
Refd, white, bgs, NY ton	75.00	80.00	75.00	80.00	50.00	80.00
Tankage Grd, NY ....unit ¤	...	2.65	2.50	3.25	1.70	2.75
Ungrd .....unit ¤	...	2.40	2.00	2.75	2.35	2.60
Fert grade, f.o.b. Chicago .....unit ¤	...	2.50	1.80	2.40	1.40	3.00
South American cif..unit ¤	...	3.00	2.75	3.10	...	2.50
Tapioca Flour, high grade, bgs .....lb.	.0215	.05	.0215	.05	.03	.05
Tar Acid Oil, 15%, drs gal.	.21	.22	.21	.22	.20	.22
25%, drs .....gal.	.23	.24	.23	.24	.22	.24
Tar, pine, delv, drs .....gal.	.25	.26	...	...	...	...
tks, delv .....gal.	...	.20	...	...	...	...
Tartar Emetic, tech .....lb.	.22¼	.23	.23	.23	...	...
USP, bbls .....lb.	.28	.28½	.27	.28½	...	...
Terpineol, den grd, drs ...lb.	.13¼	.14¾	...	...	...	...
tks .....lb.	.13	.14	...	...	...	...
Tetrachlorethane, 50 gal drs lb.	.08½	.09	.08½	.09	.08½	.09
Tetralene, 50 gal drs, wks lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbl lb.	.20	.25	.20	.25	.25	.28½

† Bags 15c lower; ¤ + 10.

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	Current Market	1934 Low	1934 High	1933 Low	1933 High
Tin, crystals, 500 lb bbls, wks ..... lb.	.38	.38½	.30	.40½	.24	.41
Metal, NY ..... lb.	...	.508	.50⅞	.55⅜	.23	.57
Oxide, 300 lb bbls, wks lb.	.56	.58	.55	.60	.27½	.59
Tetrachloride, 100 lb drs, wks ..... lb.	.25½	.26	.25½	.28½	.26	.28
Titanium Dioxide, 300 lb bbls ..... lb.	.17¼	.19¼	.17¼	.19¼	.17¼	.19¼
Barium Pigment, bbls .... lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Calcium Pigment, bbls .... lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Toluol, 110 gal drs, wks gal.	...	.35	...	.35	...	.35
8000 gal tks, frt allowed gal.	...	.30	...	.30	...	.30
Toluidine, mixed, 900 lb drs, wks ..... lb.	.27	.28	.27	.28	.27	.28
Toner Lithol, red, bbls .... lb.	.75	.80	.75	.85	.80	.95
Para, red, bbls ..... lb.	...	.75	.75	.80	...	.80
Toluidine, bgs ..... lb.	...	1.35	...	1.35	1.35	1.55
Triacetin, 50 gal drs, wks lb.	.32	.36	.32	.36	.32	.36
Triamyl Borate, drs, wks lb.	...	.40	...	.40	...	...
Triamylamine, drs, wks .. lb.	...	1.25	1.00	1.25	...	...
Trichlorethylene, 50 gal drs lb.	.09½	.10	.09½	.10	.09½	.10
Triethanolamine, 50 gal drs ..... lb.	.35	.38	.35	.38	.35	.38
Tricresyl Phosphate, drs .. lb.	.21	.23	.19	.26	.19	.26
Triphenyl Guanidine ..... lb.	.58	.60	.58	.60	.58	.60
Tripoli, airfloated, bgs, wks ..... ton	27.50	30.00	...	...	...	...
Tungsten, Wolframite per unit	15.00	15.25	12.00	15.25	10.00	12.50
Turpentine (Spirits), c-l, NY dock, bbls ..... gal.	...	.49¾	.46¼	.63½	.46¼	.51½
Savannah, bbls ..... gal.	...	.45*	.41¼	.58½	...	...
Jacksonville, bbls ..... gal.	...	.45*	.41¼	.58½	...	...
Wood Steam dist, bbls, c-l, NY ..... gal.	...	.45	.41	.61	.42	.48
Urea, pure, 112 lb cases .. lb.	.15½	.17	.15	.17	.15	.17
Fert grade, bgs c.i.f. .. ton	100.00	120.00	90.00	120.00	82.60	90.00
c.i.f. S.A. points .... ton	100.00	120.00	90.00	120.00	82.60	90.00
Urea Ammonia liq 55% NH_3, tks ..... unit	...	.96	...	.96	...	...
Valonia beard, 42%, tannin bgs ..... ton	...	43.50	39.00	48.00	27.50	42.00
Cups, 32% tannin, bgs .. ton	...	28.50	23.00	32.50	17.00	25.00
Mixture, bark, bgs .... ton	...	32.00	...	32.00	22.00	28.00
Vermillion, English, kgs .. lb.	1.56	1.70	1.41	1.73	1.05	1.42
Vinyl Chloride, 16 lb cyl .. lb.	...	1.00	...	1.00	...	1.00
Wattle Bark, bgs ..... ton	...	32.00	29.50	34.00	24.00	32.00
Extract, 60°, tks, bbls .. lb.	...	.03¾	.03⅝	.03⅞	.03	.03⅞
WAXES						
Wax, Bayberry, bgs ..... lb.	.22	.23	.25	.30	.14½	.17
Bees, bleached, white 500 lb slabs, cases ..... lb.	...	.33½	.32	.37	.30	.35
Yellow, African, bgs .. lb.	.21½	.22	.16	.22	.13	.20
Brazilian, bgs .... lb.	.22½	24½	...	...	...	...
Chilean, bgs ..... lb.	.22½	24½	...	...	...	...
Refined, 500 lb slabs, cases ..... lb.	.27½	.28	.21	.29	.18	.26
Candelilla, bgs ..... lb.	.11	.12½	.10¼	.14½	.09	.11
Carnauba, No. 1, yellow, bgs ..... lb.	.36½	.40	.30	.40	.20	.35
No. 2, yellow, bgs .... lb.	.35½	.39	.34	.41	...	...
No. 2, N. C., bgs .... lb.	.28	.29	.20	.29	.14	.20
No. 3, Chalky, bgs ... lb.	.21	.23½	...	...	...	...
No. 3, N. C., bgs .... lb.	.23	.25	.16¼	.25	.11½	.17
Ceresin, white, imp, bgs lb.	.43	.45	...	...	...	...
Yellow, bgs ..... lb.	.36	.38	...	...	...	...
Domestic, bgs ..... lb.	.08	.11	...	...	...	...
Japan, 224 lb cases .... lb.	.06	.06½	.06	.07½	...	...
Montan, crude, bgs .... lb.	.10½	.11	.10	.11	.03¾	.10
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.19	.20	.18	.20	.17	.22
Cakes, cases ..... lb.	.20	.22	.19	.21	.18	.23
Whiting, 200 lb bgs, c-l, wks ..... ton	...	12.00	...	...	...	...
Alba, bgs, c-l, NY ..... ton	...	15.00	...	15.00	13.00	15.00
Gliders, bgs, c-l, NY ... ton	...	15.00	...	...	...	...
Wood Flour, c-l, bgs ..... ton	18.00	30.00	18.00	30.00	18.00	36.00
Xylol, frt allowed, East 10° tks, wks ..... gal.	.27	.29	.27	.29	.29	.29
Coml, tks, wks ..... gal.	...	.26	...	.26	...	.26
Xylidine, mixed crude, drs lb.	.36	.37	.36	.37	.36	.37
Zinc, Carbonate tech, bbls, NY ..... lb.	.09½	.11	.09½	.11	.09½	.11
Chloride fused, 600 lb drs, wks ..... lb.	.04½	.05¾	.04¼	.05¼	.05	.05¼
Gran, 500 lb bbls, wks .. lb.	...	.05¾	.05⅛	.06	.05⅜	.06
Soln 50%, tks, wks..100 lb.	...	2.00	...	2.00	...	3.00
Cyanide, 100 lb drs .... lb.	.36	.41	.36	.41	.38	.39
Zinc Dust, 500 lb bbls, c-l, delv ..... lb.	...	.057	.0567½	.071	.04¾	.07½
Metal, high grade slabs, c-l, NY ..... 100 lb.	...	4.075	4.05	4.75	3.02	5.37
E. St. Louis ..... 100 lb.	...	3.725	3.70	4.46	...	...
Oxide, Amer, bgs, wks.. lb.	.05¾	.06¼	.05¾	.06¼	.05	.06
French, 300 lb bbls, wks ..... lb.	.06½	.10⅞	.05¾	.11⅛	.05¾	.11⅛
Palmitate, bbls ..... lb.	.21	.22	.20	.22	.17½	.21
Perborate, 100 lb drs .. lb.	...	1.25	...	1.25	...	1.25
Peroxide, 100 lb drs .. lb.	...	1.25	...	1.25	...	1.25
Resinate, fused, dark, bbls ..... lb.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Stearate, 50 lb bbls .... lb.	.18	.21	.18	.21	.15	.19

* Asked, no bids.

	Current Market		1934 Low	1934 High	1933 Low	1933 High
Zinc Sulfate, crys, 400 lb bbl, wks ..... lb.	.028	.033	.02¾	.033	.03	.03½
Flake, bbls ..... lb.	.035	.032	...	...	...	...
Sulfide, 500 lb bbls, delv lb.	.10¾	.11¾	.10¾	.13½	.12	.13½
bgs, delv ..... lb.	.10½	.11½	...	...	...	...
Sulfocarbolate, 100 lb kgs ..... lb.	.24	.25	.21	.25	.21	.22
Zirconium Oxide, Nat kgs lb.	.02½	.03	.02½	.03	.02½	.03
Pure, kgs ..... lb.	.45	.50	.45	.50	.45	.50
Semi-refined, kgs ..... lb.	.08	.10	.08	.10	.08	.10

Oils and Fats

Castor, No. 3, 400 lb bbls. . lb.	.09¾	.10½	.09¾	.10½	.08½	.09¾
Blown, 400 lb bbls ..... lb.	.11½	.12¼	.11½	.12¾	.11¼	.12¾
China Wood, bbls spot NY lb.	.094	.096	.07½	.099	.04⅞	.09⅛
Tks, spot NY ..... lb.	...	.088	.07¼	.094	.04¼	.08½
Coast, tks ..... lb.	.087	.088	.06⅞	.094	.04⅛	.08⅛
Coconut, edible, bbls NY . . lb.	...	.04	.04¾	.10¾	...	.10¾
Manila, bbls NY ..... lb.	...	.04¾	.03¾	.04¾	.03⅞	.04¾
Tks, NY ..... lb.	...	.03¾	.02⅝	.03¾	.02¾	.03¾
Tks, Pacific Coast ... lb.	...	.03½	.02¼	.02½	.02½	.03⅜
Cod, Newfoundland, 50 gal bbls ..... gal.	.36	.38	.34	.40	.19	.35
Copra, bgs, NY ..... lb.	.02	.021	.012	.021	.015½	.019
Corn, crude, bbls, NY .... lb.	...	.10½	.04⅝	.10½	.04⅝	.07¾
Tks, mills ..... lb.	...	.09½	.03½	.09½	.02⅞	.06½
Refd, 375 lb bbls, NY . . lb.	...	.12	.05¾	.12	.05¾	.08¾
Cottonseed, see Oils and Fats News Section.						
Degras, American, 50 gal bbls, NY ..... lb.	.04½	.05½	.02¾	.05½	.02½	.03
English, brown, bbls, NY lb.	.05¼	.05⅜	.03¾	.05⅜	.02⅞	.04
Greases, Yellow ..... lb.	.05	.05⅛	.02⅜	.05⅛	.01¾	.03⅝
White, choice bbls, NY lb.	.05¼	.05⅝	.02¾	.05⅝	.02½	.04⅜
Herring, Coast, tks ..... gal.	.23	Nom.	.15	.23	.11	.23
Lard Oil, edible, prime ... lb.	...	.09¾	...	.09¾	.08½	.10½
Extra, bbls ..... lb.	...	.08½	.07	.08½	.07½	.08¼
Extra, No. 1, bbls ..... lb.	...	.08¼	.06⅜	.08¼	.06	.08
Linseed, Raw, less than 5 bbl lots ..... lb.	...	.095	.095	.105	.08	.12
bbls, c-l spot ..... lb.	...	.087	.087	.101	.072	.11
Tks ..... lb.	...	.081	.081	.095	.066	.104
Menhaden, tks, Baltimore gal.	...	.25	.15	.25	.09	.15
Refined, alkali, drs .... lb.	...	.061	.052	.069	...	...
Tks ..... lb.	...	.055	.046	.061	...	...
Light pressed, drs ..... lb.	...	.055	.046	.057	...	...
Tks ..... lb.	...	.049	.04	.05	...	...
Neatsfoot, CT, 20° bbls, NY ..... lb.	...	.16½	...	.16½	.11¾	.16¾
Extra, bbls, NY ..... lb.	...	.08½	.07	.08½	.06½	.08¼
Pure, bbls, NY ..... lb.	...	.12	.12	.13	.07¾	.14
Oleo, No. 1, bbls, NY .... lb.	...	.10¼	.06	.11½	.05	.06⅞
No. 2, bbls, NY ..... lb.	...	.10	.05⅜	.11¼	.04¼	.06⅜
Olive, denat, bbls, NY ... gal.	.84	.86	.76	.90	.47	.80
Edible, bbls, NY ..... gal.	1.55	1.70	1.55	1.90	1.30	1.85
Foots, bbls, NY ..... lb.	.07⅛	.07½	.06½	.07½	.04⅜	.06¾
Palm, Kernel, casks ..... lb.	.03	Nom.	.02½	.04¼	.04	.04¾
Niger, cks ..... lb.	...	.0340	.031	.03¾	.024	.04½
Peanut, crude, bbls, NY . . lb.	...	.10¾	.06½	.10¾	.03⅛	.07
Refined, bbls, NY ..... lb.	...	.12½	.07½	.12½	.07½	.11
Perilla, drs, NY ..... lb.	...	.08¾	.08¼	.09⅝	.05	.10½
Tks, Coast ..... lb.	.08¼	Nom.	.07½	.09	.03¾	.09¾
Pine, see Pine Oil, Chemical Section.						
Rapeseed, blown, bbls, NY lb.	.08	.082	.08	.082	...	...
Denatured, drs, NY ... gal.	.40	.41	.37	.44	.34	.65
Red, Distilled, bbls ..... lb.	.07⅛	.08⅜	.06⅞	.08⅜	.05⅞	.07⅝
Tks ..... lb.	...	.06½	.06	.06½	.05	.06
Salmon, Coast, 8000 gal tks ..... gal.	.25	Nom.	.15	.21	.11	.18
Sardine, Pac Coast, tks . . gal.	.24½	.25	.13	.25	.09½	.20
Refined alkali, drs ..... lb.	...	.065	...	...	...	...
Tks ..... lb.	...	.061	...	...	...	...
Light pressed, drs ..... lb.	...	.055	...	...	...	...
Tks ..... lb.	...	.049	...	...	...	...
Sesame, yellow, dom ..... lb.	.12¼	.13	.07½	.13¼	.08½	.10
White, dos ..... lb.	.12¾	.13	.08	.13¼	.10	.11
Soy Bean, crude						
Pacific Coast ..... lb.	...	Nom.	..	Nom.	.032	.035
Dom, tks, f.o.b. mills . . lb.		.08	.06	.08	.027	.085
Crude, drs, NY ..... lb.	.086	.09	.066	.09	.04	.095
Refd, bbls, NY ..... lb.	.091	.102	.071	.102	.04½	.106
Tks ..... lb.	.08	.087	...	...	...	...
Sperm, 38° CT, bleached, bbls NY ..... lb.	.099	.101	.106	.11	...	...
45° CT, bleached, bbls, NY ..... lb.	.092	.094	.099	.103	...	...
Stearic Acid, double pressed dist bgs ..... lb.	.10	.11	.09	.11	.07½	.10
Double pressed saponified bags ..... lb.	.09	.10	.09	.10	.08	.10
Triple pressed dist bgs . . lb.	.12¾	.13¾	.11¾	.13¾	.10¼	.12¾
Stearine, Oleo, bbls ..... lb.	.09¼	.09⅜	.05	.10⅝	.03½	.06¾
Tallow City, extra loose . . lb.	...	.05⅜	.02⅞	.05⅜	.02	.03⅞
Edible, tierces ..... lb.		.07¼	.04¾	.07¼	.03½	.05⅛
Tallow Oil, bbls, c-l, NY lb.	.05¾	.06	.05¾	.06	.05¾	.06
Acidless, tks, NY ..... lb.	...	.07½	.06	.07½	.05	.07
Vegetable, Coast mats . . lb.	.07¼	Nom.	.06	.07¼	.04¼	.06
Turkey Red, single, bbls . . lb.	.07½	...	.07½	...	.06¼	.07½
Double, bbls ..... lb.	.12½	.13	.12½	.13	.08	.13
Whale, crude, coast, tks . . lb.	...	.04	...	...	...	...
Winter bleach, bbls, NY lb.	.07	.08	...	.072	...	...
Refined, nat, bbls, NY . . lb.	.064	.066	.064	.07	...	...

* New crop shipment tanks .07.

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